

PENTAX

15
S VHS

VIDEO CAMERA/RECORDER

MODEL **PV-C1SA**

INSTRUCTION MANUAL



PENTAX ***MOVIE***

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.



CAUTION

**RISK OF ELECTRIC SHOCK
DO NOT OPEN**



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER — SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

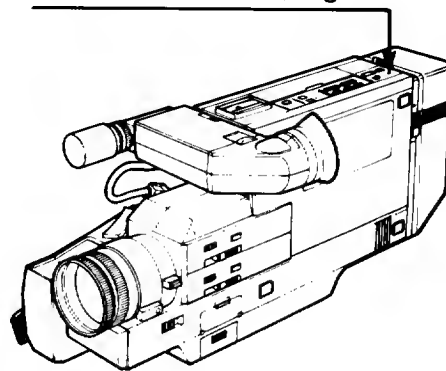
This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

DEW (MOISTURE CONDENSATION)

Moisture condensation may occur if the video camera/recorder is moved from a cold area to a warm humid area. A flashing **"POWER"** light indicates that moisture is on the recorder mechanism, which could result in damage to the tape. When the **"POWER"** light is flashing the unit will not operate. In this condition, press the **"EJECT"** button, remove the tape, and wait for the moisture to dry (until the **"POWER"** indicator stops flashing).

"DEW" ("POWER") Light



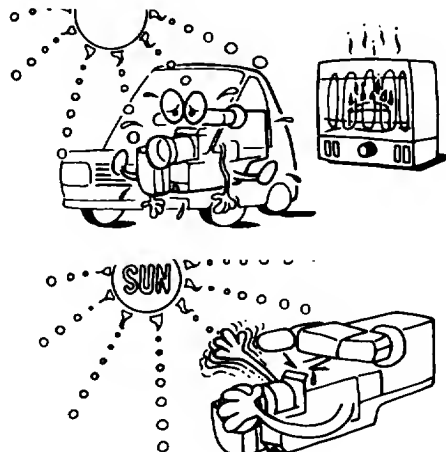
Read the Important Safety Instructions for AC Adaptor/Charger before use.

PRECAUTION

- Be careful that no water, dust or sand enters the Camera/Recorder because it may cause damage.
- The solid-state image sensor is basically immune to direct sunlight or excessively bright objects, however, avoid prolonged exposure to these adverse objects since unnecessary heat may develop.
- When you are not using the Camera/Recorder, switch off the power and attach the lens cap.
- Do not leave the viewfinder lens facing sunlight for a prolonged period, or the phosphorescent surface of the cathode ray tube may be damaged.

- Be sure not to leave it in a place where the temperature exceeds 120°F, or the pickup device may be damaged. Be careful not to leave the unit in the following places:

- Inside a car with the windows closed and in direct sunshine.
- Near heating appliances.
- In direct sunshine in summer.



Congratulations on buying the **S-VHS** Video Camera/Recorder. For maximum pleasure and convenience please read these simple instructions before operating your Camera/Recorder.

WARNING: Many television programs are copyrighted. One court has held that private, non-commercial, in-home video taping of copyrighted televised programs constitutes copyright infringement. Purchasers are advised not to copy such programs.

* **HQ** This Video Camera/Recorder with this marking incorporates **VHS** high-quality picture technology and is compatible with any Video Tape Recorder bearing the **VHS** mark.

Check to make sure you have the following components and accessories (besides the Camera/Recorder Unit itself) before disposing of the packing material.

1. Microphone
2. Electronic Viewfinder
3. Carrying Handle
4. Shoulder Strap
5. RF Converter Unit
6. 75-ohm Coaxial Cable with Antenna Adaptor
7. Antenna Adaptor (300-ohm to 75-ohm)
8. **S-VHS** Cassette
9. Audio/Video Output Adaptor
10. Shoulder Pad
11. Battery Pack (2 hour type)
12. AC Adaptor/Charger
13. Earphone
14. Batteries for clock

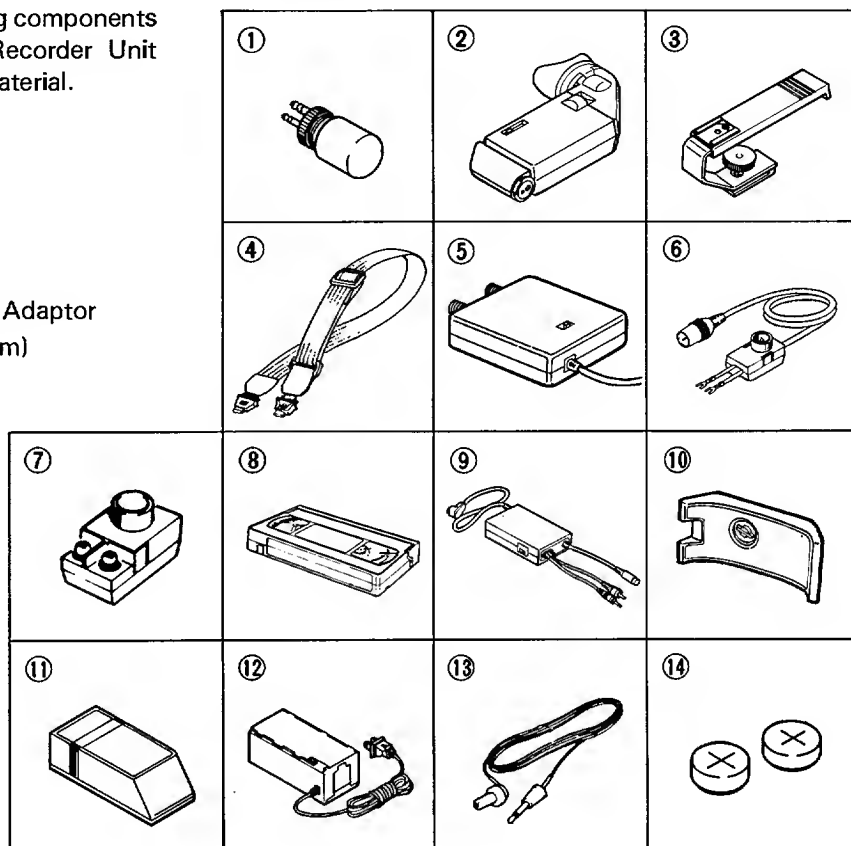


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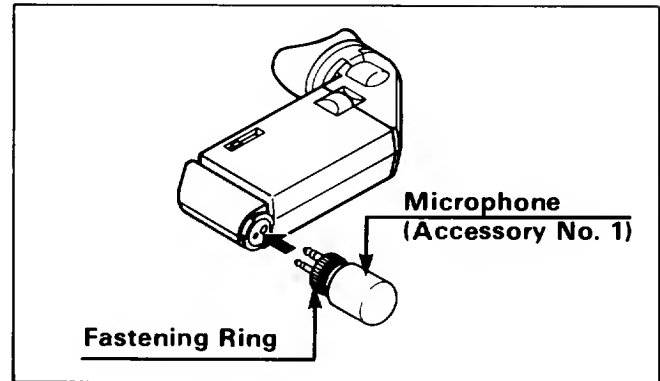
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HOW TO ASSEMBLE VIDEO CAMERA/RECORDER

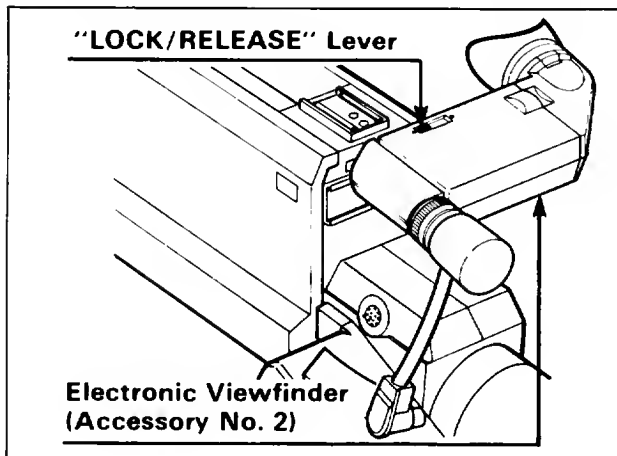
■ MOUNTING THE MICROPHONE

1. To install the microphone align the connecting pins and insert the microphone through, then turn clockwise the fastening ring firmly.
2. To remove the microphone, turn the fastening ring connector counterclockwise and pull out the microphone. (Please do not turn microphone itself.)

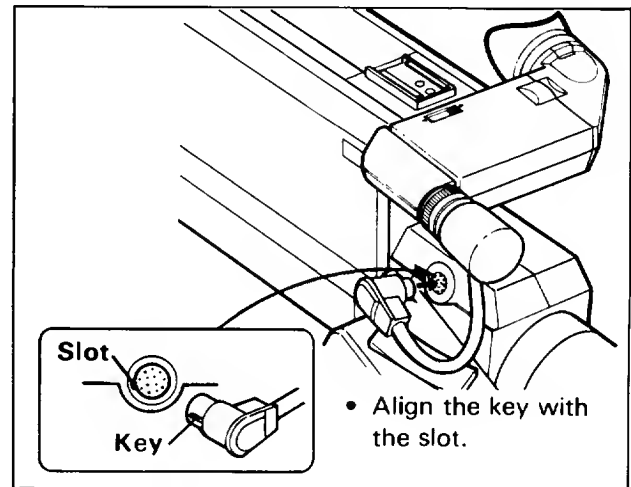


■ ELECTRONIC VIEWFINDER

1. Set "LOCK/RELEASE" Lever on the Electronic Viewfinder (Accessory No. 2) to "RELEASE" position and then slide the Electronic Viewfinder into the shoe in front of the Video Camera/Recorder.
2. Position the Electronic Viewfinder as desired and set "LOCK/RELEASE" Lever to "LOCK" position.



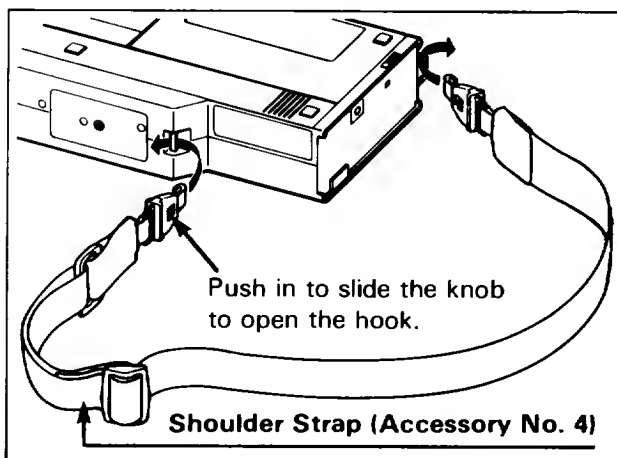
3. Connect the Cable from Electronic Viewfinder to the jack of the Video Camera/Recorder.



NOTE: To remove the Electronic Viewfinder follow the procedures in reverse way.

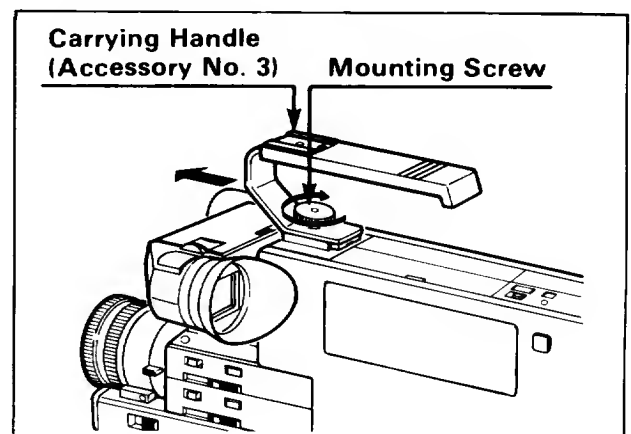
■ INSTALLING THE SHOULDER STRAP

1. Attach the Shoulder Strap (Accessory No. 4), as illustrated below.



■ MOUNTING THE CARRYING HANDLE

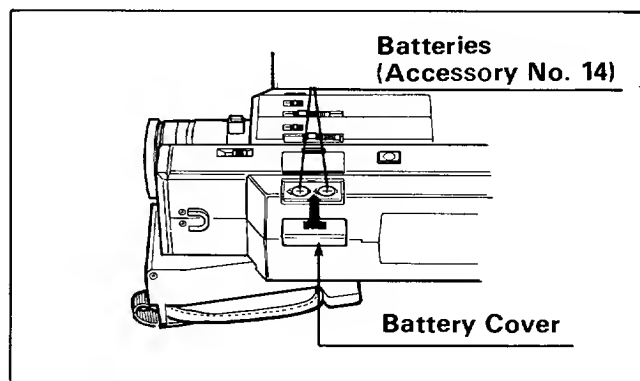
1. Slide the Carrying Handle (Accessory No. 3) into the Shoe on the top of Video Camera/Recorder.
2. Fasten the Mounting Screw.



■ LOADING BATTERIES FOR DATE/CLOCK

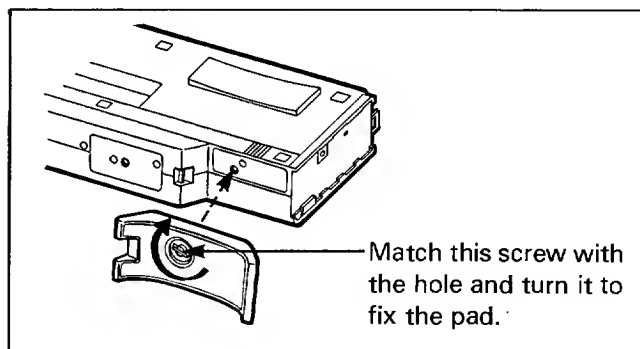
Slide the Battery Cover downward to expose the Battery Compartment. Insert the clock batteries (Accessory No. 14) with the "+" terminal facing out (as shown in the drawing on the inside of the Battery Cover). See page 19 for instructions on setting the clock.

NOTE: When replacing the batteries, use Silver Oxide Batteries "G13" or equivalent.



■ MOUNTING THE SHOULDER PAD

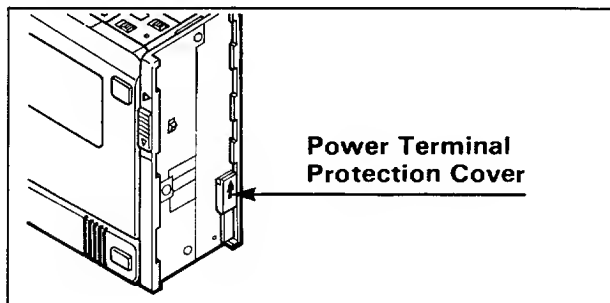
Attach the shoulder pad as shown in the figure.



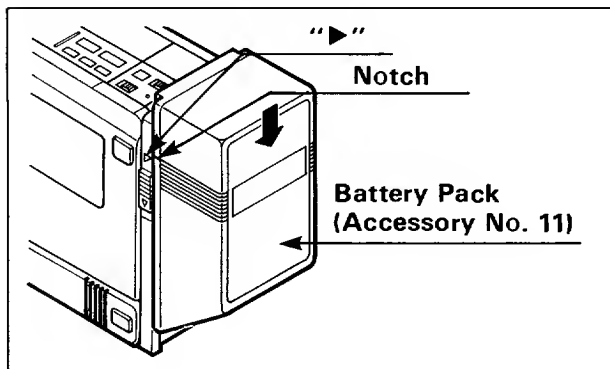
POWER SOURCES

■ WHEN USING WITH THE BATTERY PACK (Accessory No. 11)

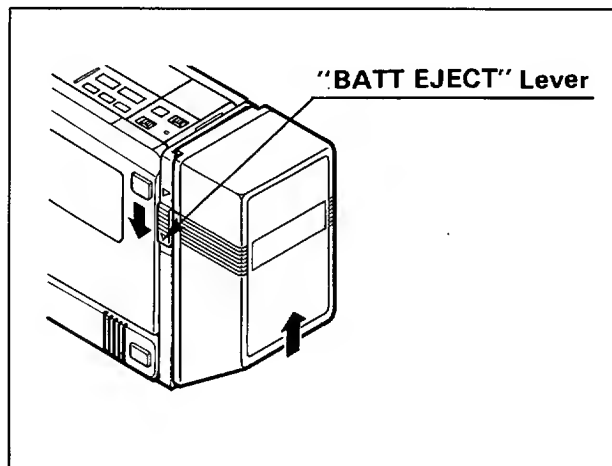
1. Be sure that the Power Terminal Protection Cover is in the uppermost position and it is covering the Terminal.



2. For attachment align the notch on the side of the Battery Pack (Accessory No. 11) with "►" on the rear left side of the Video Camera/Recorder so that the Battery fits in the grooves, and slide the Battery Pack downward, as illustrated.

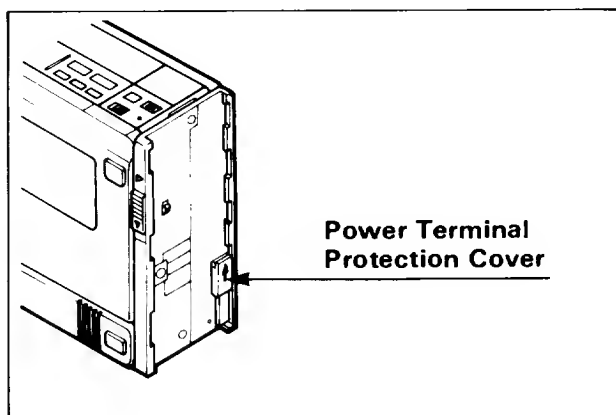


3. For removal, slide the Battery Pack upward while holding the "BATT EJECT" Lever downward.

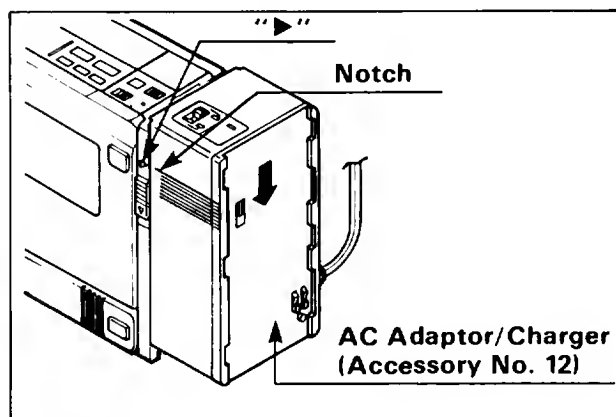


■ **WHEN USING WITH THE AC ADAPTOR/CHARGER (Accessory No. 12)**

1. Be sure that the Power Terminal Protection Cover is in the uppermost position and it is covering the Terminal.



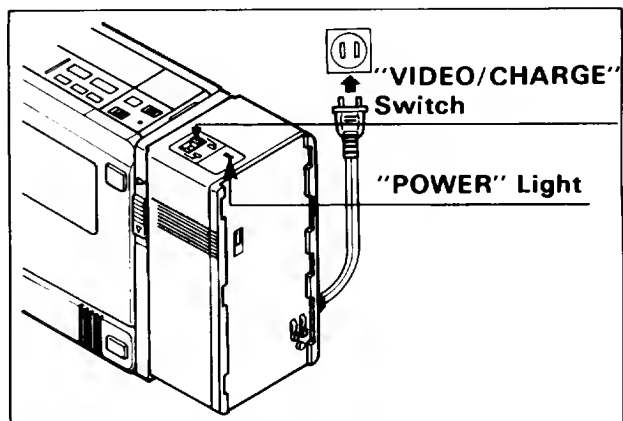
2. For attachment align the notch on the side of the AC Adaptor/Charger (Accessory No. 12) with "►" on the rear left side of the Video Camera/Recorder so that it fits in the grooves, and slide the AC Adaptor/Charger downward as illustrated.



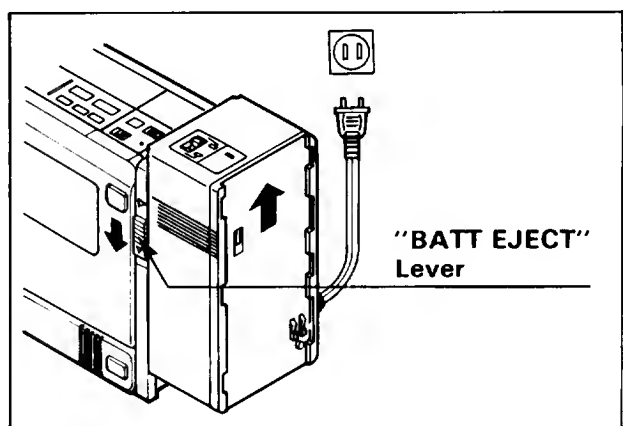
3. Plug the AC Adaptor/Charger power cord into AC electrical outlet, and the "POWER" Light will come on.

NOTE: This Adaptor/Charger is universal for use with AC 100 ~ 240V around the world.

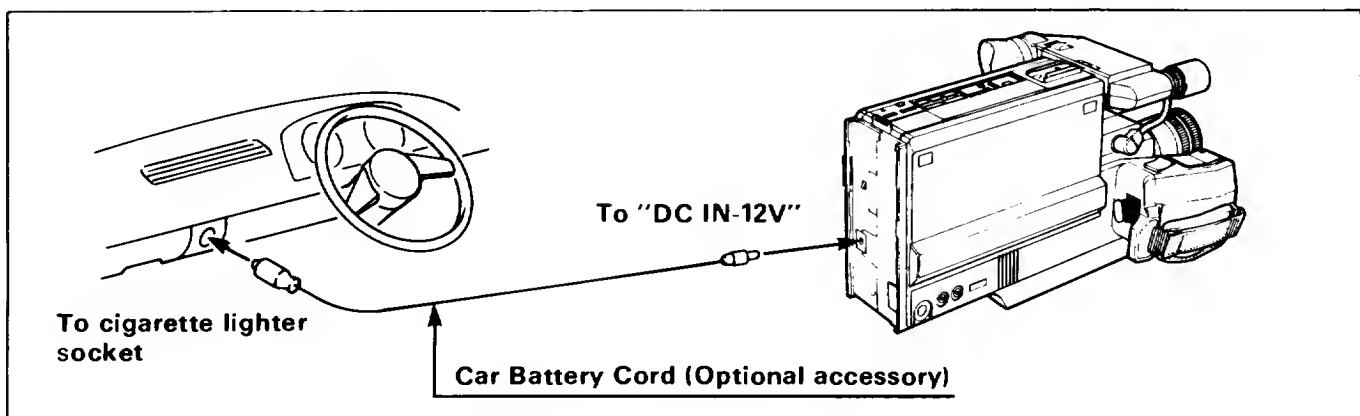
4. Set "VIDEO/CHARGE" Switch to "VIDEO" position.



5. For removal, slide the AC Adaptor/Charger upward while holding the "BATT EJECT" Lever downward.



■ **WHEN USING WITH THE CAR BATTERY (By using optional car battery cord PC-YC12)**



1. Connect the optional car battery cord to the "DC IN-12V" jack of the Video Camera/Recorder and the car's cigarette lighter socket.

NOTE: The Car Battery Cord is designed to be used only with automobiles having a 12-volt negative ground system.

S-VHS

S-VHS has realized high resolution (a horizontal resolution of 400 lines or more) and high picture quality when compared to the standard **VHS** format.

Usable cassette tapes

- Use a video cassette with an **S-VHS** mark.
- Cassettes with an **S-VHS** mark can be recorded in both the **S-VHS** and **VHS** formats.
- You can use cassettes with a **VHS** mark, but the recording will be in the **VHS** format.

Compatible with standard **VHS** recorders

- Tapes recorded in the **S-VHS** format can be played only by recorders with an **S-VHS** mark.
- You can switch this Camera/Recorder to record in both the **S-VHS** and **VHS** formats.
- This Camera/Recorder discriminates between the **S-VHS** and **VHS** recording formats automatically in playback.

TVs that can be connected

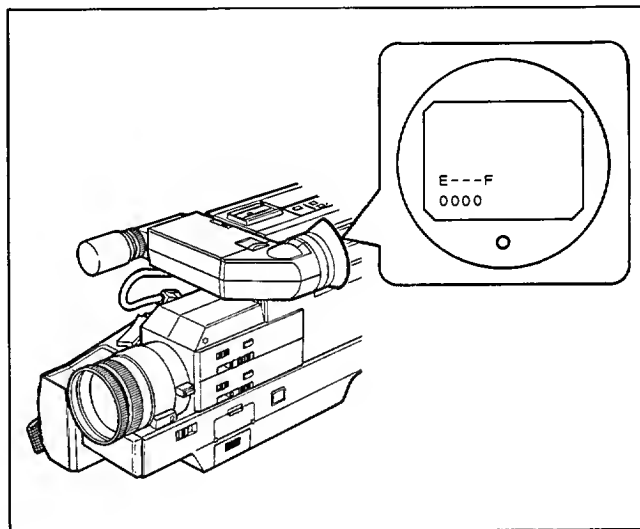
- Tapes recorded in the **S-VHS** format produce high quality pictures with high resolution. It is therefore better to connect this Camera/Recorder to a high picture-quality, high-resolution TV to fully enjoy the superb performance of the Camera/Recorder. We recommend TV sets with S-input jack or A/V input jack.

CHECKING THE BATTERY PACK

When the Indicator Lamp (RED) in the Electronic Viewfinder flashes while the Video Camera/Recorder is operated with a Battery pack (Accessory No. 11), it indicates that the battery capacity is insufficient. Then, charge it or replace it with a charged battery pack.

NOTE: Whenever the tape counter or time remaining display is present in the viewfinder, it appears with a 3-dash read-out indicating the approximate status of Camera/Recorder battery power. When the battery is fully charged, the display reads "E---F". After several minutes, only two dashes appear.

When the battery is very near empty, only one dash remains. When the last dash starts blinking, you should find an alternative power source or recharge the battery before continuing to use your Camera/Recorder.

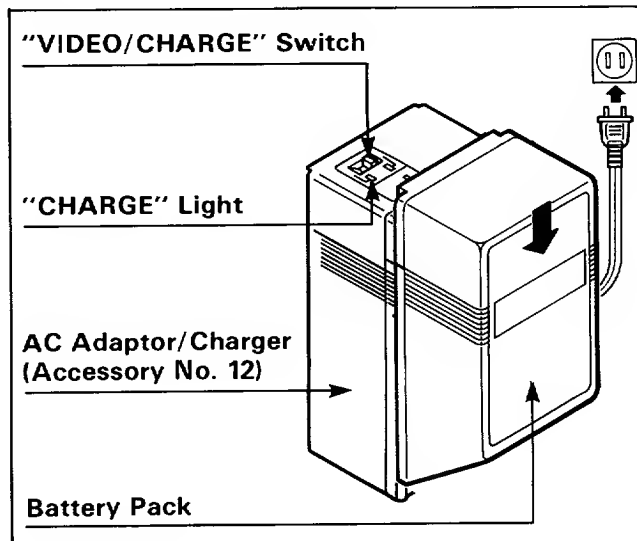


CHARGING THE BATTERY PACK

1. Attach the Battery Pack to the AC Adaptor/Charger (Accessory No. 12).
2. Plug the AC Adaptor/Charger power cord into AC outlet.
3. Set "VIDEO/CHARGE" Switch to "CHARGE" position. The Charge Indicator Light will be lighted while the Battery is accepting a charge, and will go out when the Battery is fully charged.

NOTES:

1. The AC Adaptor/Charger may be left attached to the Video Camera/Recorder during the Battery charging operation, but it cannot be used to power the Video Camera/Recorder while charging the Battery Pack.
2. The time for Battery charging is approx. two hours.
3. An optional standard playback Battery may also be charged by this AC Adaptor/Charger.



IDENTIFICATION AND OPERATION OF CONTROLS

"IRIS AUTO/MANUAL" Switch

When this Switch is in the "AUTO" position, the iris is controlled automatically. Set the Switch to "MANUAL" position to control the iris manually by moving Manual Iris Control.

"WHITE BAL"ance Switch

When this Switch is in the "AUTO" position, the color balance is set automatically. Place the Switch in "MANUAL" position to adjust the color balance to suit your personal preference. (See page 15.)

Zoom Ring (Manual Zooming)

The picture size can be magnified 8 times with the use of the zoom feature. Just rotate the Zoom Ring for a close up (T) or wide angle (W) picture. Macro close-up, as close as 1 cm from object, is feasible.

Focus Ring

Do not attempt to manually turn the Focus Ring when the Camera/Recorder is in the AUTO FOCUS mode.

Lens

F1.2 (11 ~ 88 mm) 8:1 power zoom lens features auto focus and auto iris functions.

Auto Focus Window

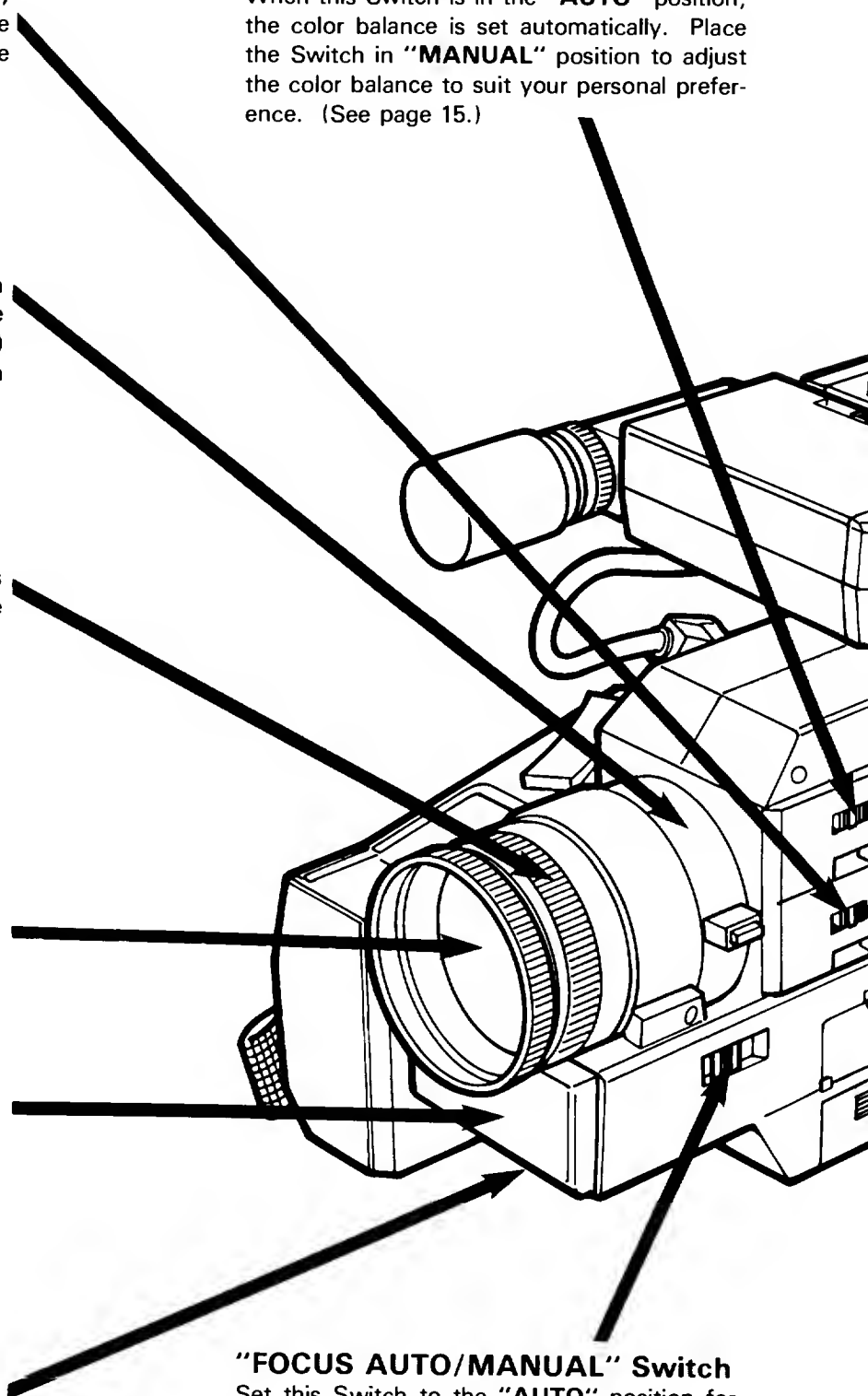
To automatically focus the camera lens, this window transmits and receives infrared light which is reflected off the subject. Make sure you don't obstruct this window when recording.

Lens Cap Holder

Place the Lens Cap in this holder when you are ready to record a scene. The holder also prevents the Lens Cap from swinging around on its cord.

"FOCUS AUTO/MANUAL" Switch

Set this Switch to the "AUTO" position for automatic focusing, and to the "MANUAL" position for focusing with the Focus Ring. When the Switch is pushed inwards while in the "MANUAL" position, automatic focusing is performed until the Switch is released.





Accessory Shoe

Used to attach the Carrying Handle (Accessory No. 3) or Camera Light.

"BATT EJECT" Lever

Releases the Battery or the AC Adaptor/Charger attached to the Video Camera/Recorder.

"REVIEW" Button

Used to review the last few seconds of recorded segment in the record/pause mode.

Manual White Balance Control

Use this control to adjust the color balance manually. Set the "WHITE BAL" Switch to "MANUAL", and while viewing color monitor, adjust this control for a nature picture.

"TIME/DATE" Button

Operate this button to record the date and time superimposed on the picture being shot.

Manual Iris Control

Set "IRIS AUTO/MANUAL" Switch to "MANUAL" position and then slide this control to the right or left for manual iris controlling.

Battery Compartment

With two batteries installed, the Camera/Recorder will "remember" the correct date and time for approximately one year. (See page 4 for battery installation procedure.)

Time/Date Set Buttons (behind door)

The Buttons behind the door let you set the Camera/Recorder's internal clock for the correct date and time. (See page 19.)

"RESET/T-160" Button

When the tape counter is displayed in the viewfinder, pressing this Button resets the counter to 0000. When the time remaining read-out is displayed, pressing this Button adapts the display for extended length T-160 (2 Hr., 40 Min.) tapes. The light beside this Button glows when the Camera/Recorder is in T-160 tape mode.

"DISPLAY" Button

Pressing this Button once causes a 4-digit tape counter and battery indicator display to appear in the Camera/Recorder's electronic viewfinder. Press again to display the battery indicator and the amount of time remaining on the cassette in the Camera/Recorder. Press a third time to delete all displays.

"MEMORY" Button

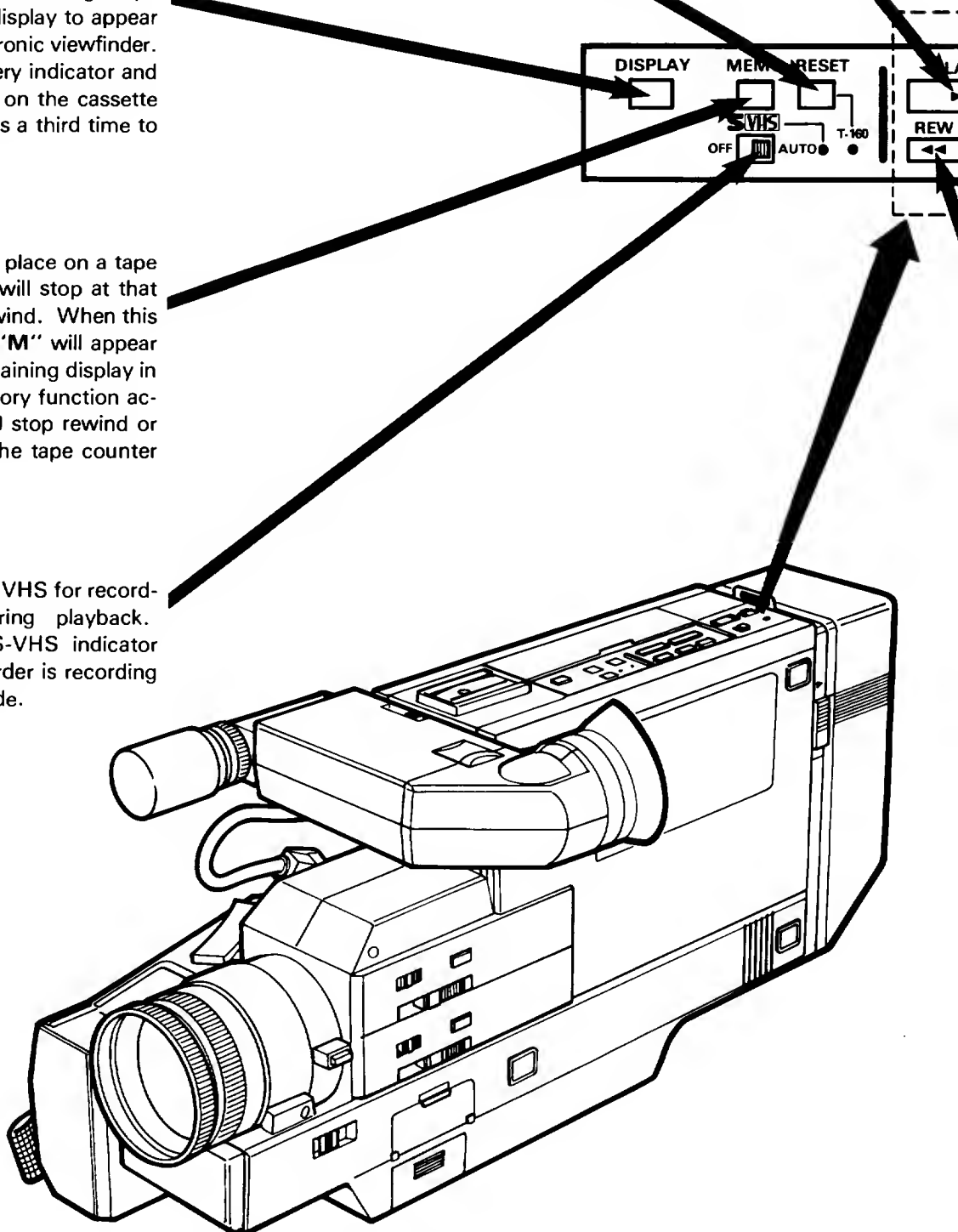
This Button lets you index any place on a tape so that the Camera/Recorder will stop at that point during fast forward or rewind. When this Button is activated, the letter "M" will appear next to the counter or time remaining display in the viewfinder. With the memory function active, the Camera/Recorder will stop rewind or fast forward operation when the tape counter reaches 0000.

"S-VHS" Switch

Use to select S-VHS or normal VHS for recording. It has no effect during playback. Normally set it to AUTO. S-VHS indicator lights when the Camera/Recorder is recording or playing back in S-VHS mode.

"PLAY" Button

Used for playback of tape recorded in SP mode.



"STOP" Button

The **"STOP"** Button is used to stop playback, rewind, and fast forward operations. The **"STOP"** Button has no effect during record operation.

"EJECT" Button

Operates with **"POWER"** either on or off.

"VTR/CAMERA" Select Switch

This Switch changes the Camera/Recorder to the record mode or to the playback mode. The Switch must be in **"CAMERA"** position for recording.

"POWER"/Dew Indicator Light

Flashing of the Light indicates dew condensation on Camera/Recorder mechanism. While this Light is flashing, the unit will not operate. If this occurs, eject the tape and leave the power on. When the Light stops flashing, the unit can be operated.

"POWER" ON/OFF Switch

Set **"POWER"** ON/OFF Switch to turn Camera/Recorder on. Slide again to turn Camera/Recorder off.

"POWER" Light illuminates when **"POWER"** ON/OFF Switch is set and Camera/Recorder is on.

"STILL/REC/PAUSE" Button

When this button is pressed during recording, the tape stops and the Camera/Recorder enters the record/pause (stand-by) mode. When this button is pressed again, the tape runs to resume recording.

NOTE: This button may be also used to display a still picture during playback Mode.

"F.FWD" Button

Press this Button during Stop or Rewind mode, and fast-forwarding starts.

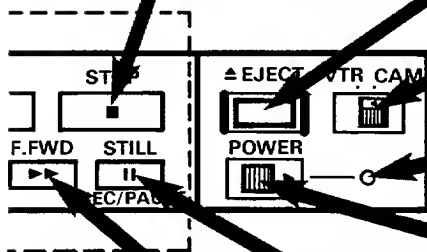
Press the Button during playback of tape, and the tape is played back in the forward direction approximately 3 times faster than the normal speed to confirm the recorded content.

Press **"PLAY"** Button to return to normal playback mode or press **"STOP"** Button to stop tape movement.

"REWIND" Button

Press this Button during Stop or Fast forward mode, and fast-rewinding starts. Press the Button during playback of tape, and the tape is played back in the rewind direction approximately 3 times faster than the normal speed to confirm the recorded contents.

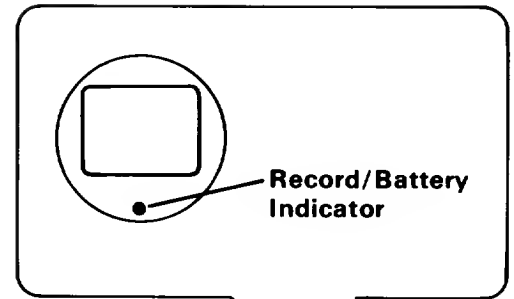
Press **"PLAY"** Button to return to normal playback mode or press **"STOP"** Button to stop tape movement.



Cassette Holder

Press "EJECT" Button to open the Cassette Holder. Be aware of the Cassette direction when inserting.

NOTE: Power source must be connected to open the Cassette Holder.



"EAR"phone Jack

Sound being recorded by the microphone or played back may be monitored by attaching earphone (Accessory No. 13) to this jack.

"DC IN-12V" Jack

Used for the optional Car Battery Cord which connects to the cigarette lighter socket in your car.

Power Terminal Protection Cover

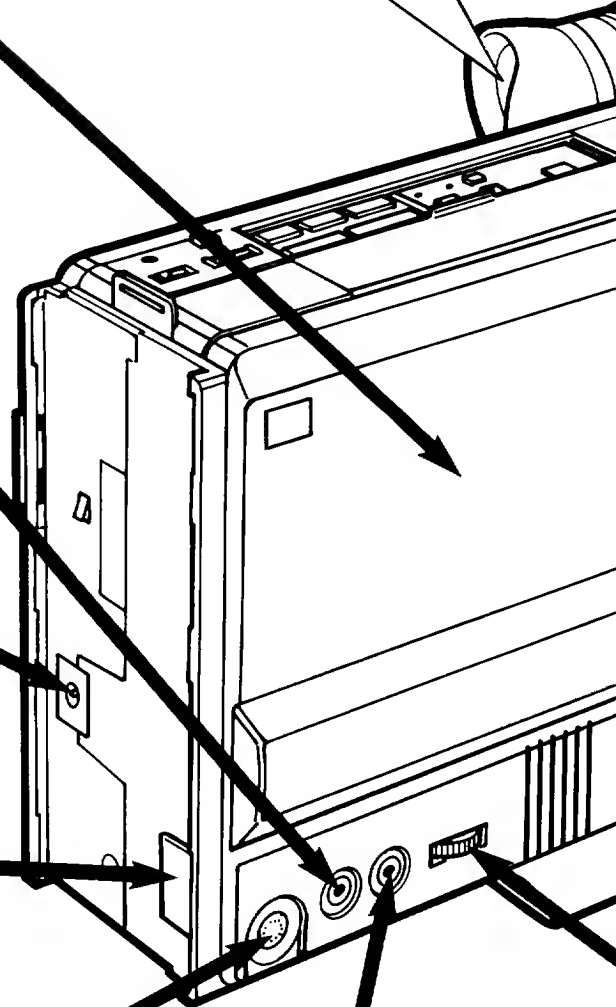
This Cover should be in the uppermost position covering the terminal at all times.

"A/V OUT" Jack

Connect the Audio/Video Output Adaptor (Accessory No. 9) to this jack and to the audio and video inputs of your TV/monitor receiver. You may also connect the RF Converter Unit (Accessory No. 5) to this jack and your TV receiver.

"REC/PAUSE" Jack

Recording and pausing may be remotely controlled by a wired Remote Pause Cable with switch (Optional accessory).



"LOCK/RELEASE" Switch

Slide the Lever to **"RELEASE"** position. Used to adjust the eyepiece position of Electronic Viewfinder (EVF).

Electronic Viewfinder (EVF)

Displays what the Camera/Recorder lens sees. The electronic viewfinder also functions as a convenient black-and-white monitor during playback of recorded material.

Microphone

Sensitive to sounds coming from the direction in which the camera is pointed. Detachable with fastening ring.

"MIC WIND/NOR" Switch

This switch is used to reduce noise that occurs due to wind. Place the Switch in the **NORM.** position for normal use.

Zoom Speed Select Switch

Select the required power zoom speed. Set to **"FAST"** for a faster zoom speed and to **"SLOW"** for a slower speed.

Power Zoom Switch

This switch performs zooming electrically.

"W": Picture becomes wider gradually.

"T": Picture becomes telescopic gradually.

Hand Strap

Adjust to best fit to your hand.

"TRACKING" Control

Used when playing a tape recorded on another VTR. Adjust for best picture. At all other times leave it in the center position, which can be found as a small detent in the movement of the knob.

Record Start/Stop Button

This Button is used to control the Camera/Recorder. When this Button is pressed with the Camera/Recorder set to the recording mode, the tape runs to start recording.

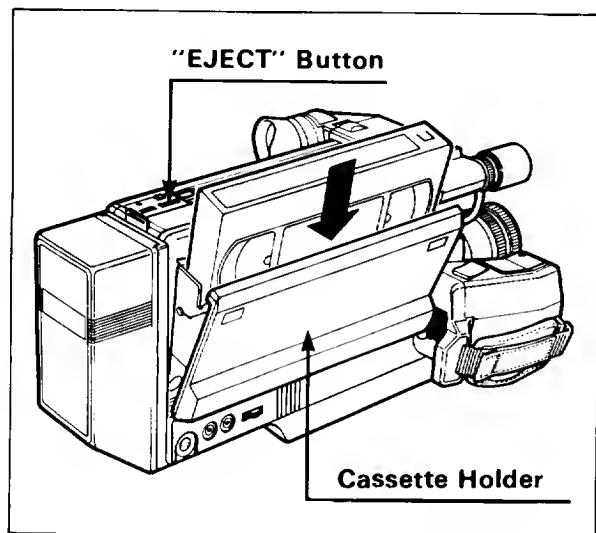
When this Button is pressed again, the tape stops and the Camera/Recorder enters the record/pause (stand-by) mode.

MAKING A SAMPLE CAMERA RECORDING

1. Connect either one of the "POWER SOURCES".
(See pages 4 and 5.)
2. Press "EJECT" Button and insert the cassette so the transparent window is toward you and the arrow toward the Cassette Holder. Slide the Cassette into Cassette Holder as far as it will go.

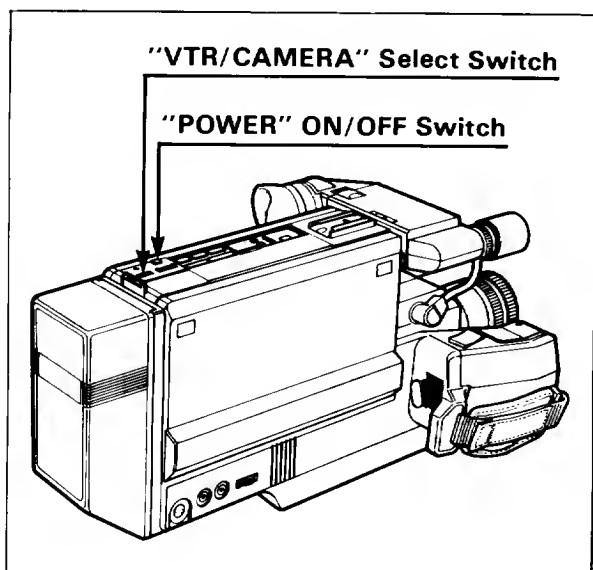
NOTE: If the power source is not connected to Camera/Recorder, the Cassette Holder will not open.

3. Press the Cassette Holder. The Holder will latch in the operating position.



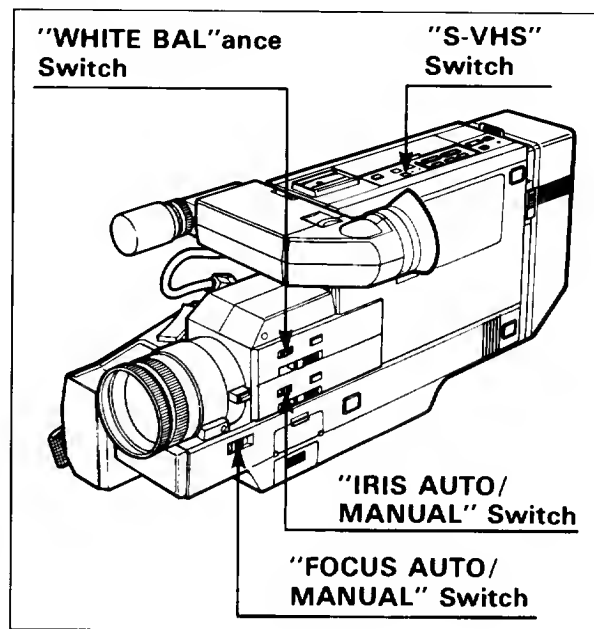
4. Set "VTR/CAMERA" Select Switch to "CAMERA" position.
5. Set "POWER" ON/OFF Switch on. The Video Camera/Recorder will enter record/pause mode automatically.

NOTE: If the erase prevention tab on the cassette is removed, the Camera/Recorder will not enter record/pause mode.

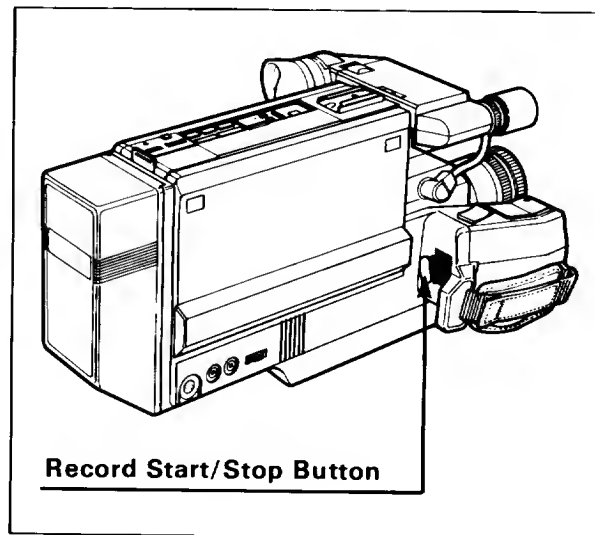


6. Set "WHITE BAL"ance switch to "AUTO" position.
7. Set "IRIS AUTO/MANUAL" Switch to "AUTO".
8. Set "FOCUS AUTO/MANUAL" Switch to "AUTO".
9. Set "S-VHS" Switch to "AUTO".

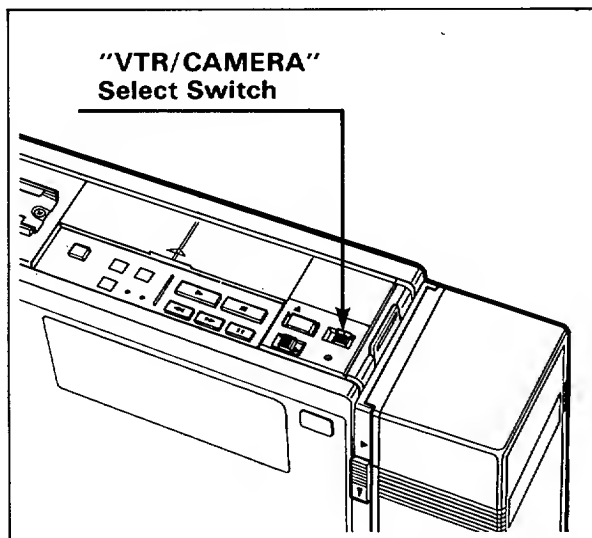
NOTE: See page 20 for "EYEPIECE ADJUSTMENT".



10. Now, press Record Start/Stop Button to start shooting the picture. You are now recording the picture you see through the Electronic Viewfinder. The Record/Battery Indicator in the Electronic Viewfinder will light.
11. Press Record Start/Stop Button to stop recording. Press the Button again to resume recording. The Record/Battery Indicator in the Electronic Viewfinder goes off in the record/pause (stand-by) mode.



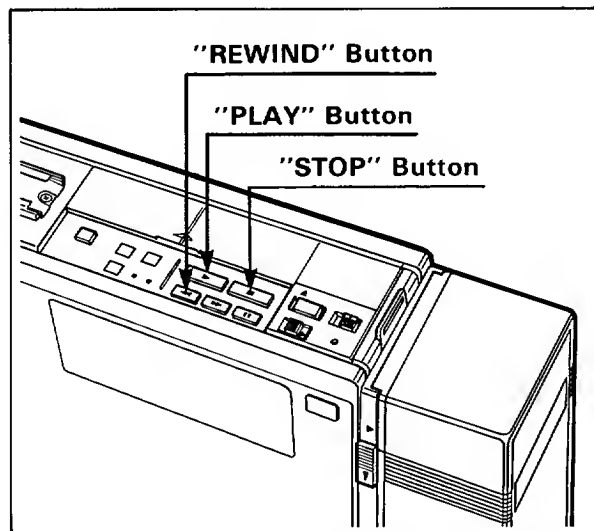
12. After recording, set **"VTR/CAMERA"** Select Switch to **"VTR"**, and the Camera/Recorder will be now in the stop mode.



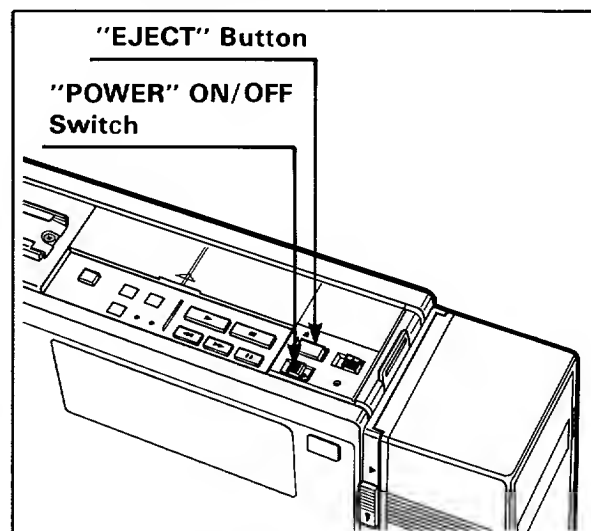
13. Press **"REWIND"** Button. The tape will be re-wound to the beginning.
14. Press **"PLAY"** Button. The picture you just recorded will be seen through the Viewfinder and sound will be heard by earphone (Accessory No. 13).

NOTE: If you connect the Video Camera/Recorder to your TV, you can see the picture played back on your TV. Refer to **"CONNECTIONS AND OPERATIONS FOR VIEWING THE PICTURE PLAYED BACK ON YOUR TV"** on pages 21 and 22.

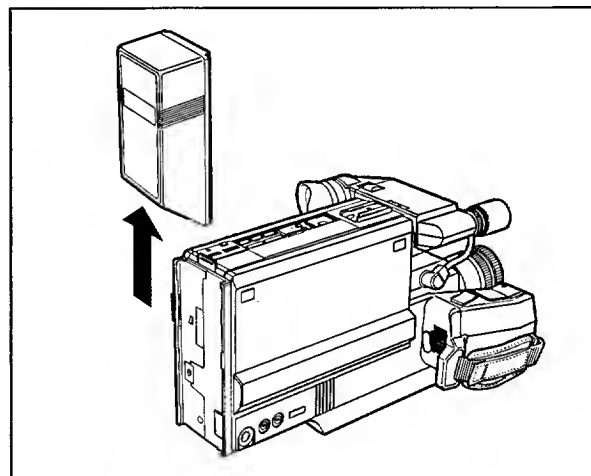
15. After playing, press **"STOP"** Button.



16. Set **"POWER"** ON/OFF Switch off and then **"EJECT"** Button to remove cassette.



17. Always remove the power source from the Video Camera/Recorder after use.

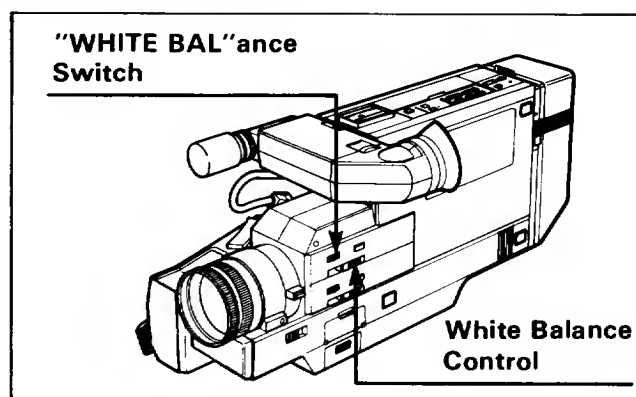


NOTE: If you have a cassette tape that has already been partially recorded on and you want to record the remaining blank section, follow the procedure below.

1. Play back the tape and press **"STILL/REC/PAUSE"** Button at the end of the previously recorded section.
2. Set **"VTR/CAMERA"** Select Switch to **"CAMERA"**. The Camera/Recorder enters the record/pause (stand-by) mode.
3. Press Record Start/Stop Button.

USING THE AUTO-WHITE BALANCE FEATURE

Your Video Camera/Recorder is equipped with a constant automatic white balance system which will continuously maintain proper color balance when the "WHITE BAL"ance Switch is in the "AUTO" position.



■ To manually adjust the white balance

This Video Camera/Recorder can adjust white balance automatically when the color temperature of light source is in the range of 2700°K — 7000°K. However, when the color temperature is more than 7000°K (snow scene, etc.) or less than 2700°K (in candle light, etc.), white balance cannot be adjusted automatically. In this case, set the "WHITE BAL"ance Switch to the "MANUAL" position and adjust the White Balance Control for the light condition.

Indications of white balance control	Applicable location	Conditions	Approx. color temperature
	Indoors	When using halogen or tungsten lighting.	2700°K } 3200°K
	Indoors	When using fluorescent lighting. Set to between and when using a mixture of halogen/tungsten and white fluorescent lights.	4500°K
	Outdoors	Fine weather.	5100°K
	Outdoors	In cloudy or rainy weather.	6000°K } 7000°K

Note: • These settings are only approximation.

- To adjust the color balance more correctly, adjust the White Balance Control for a nature picture while viewing the picture on a color monitor.

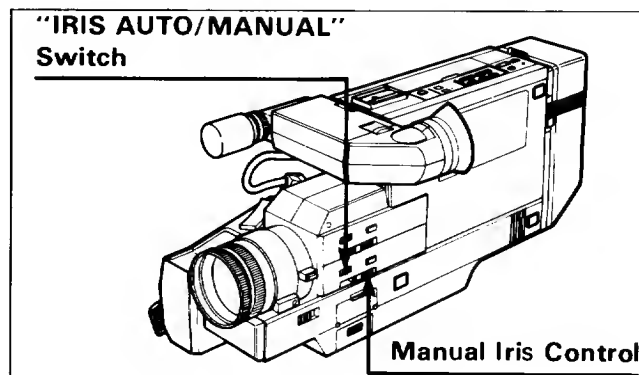
USING THE AUTO IRIS FEATURE

This Camera/Recorder is provided with an auto iris mechanism which automatically adjusts the lens aperture in accordance with the incident light when the "IRIS AUTO/MANUAL" Switch is placed in "AUTO" position. When the object is dark, the iris opens automatically, and it closes when the object is bright. When the power is switched off, the iris is automatically set to the fully closed position.

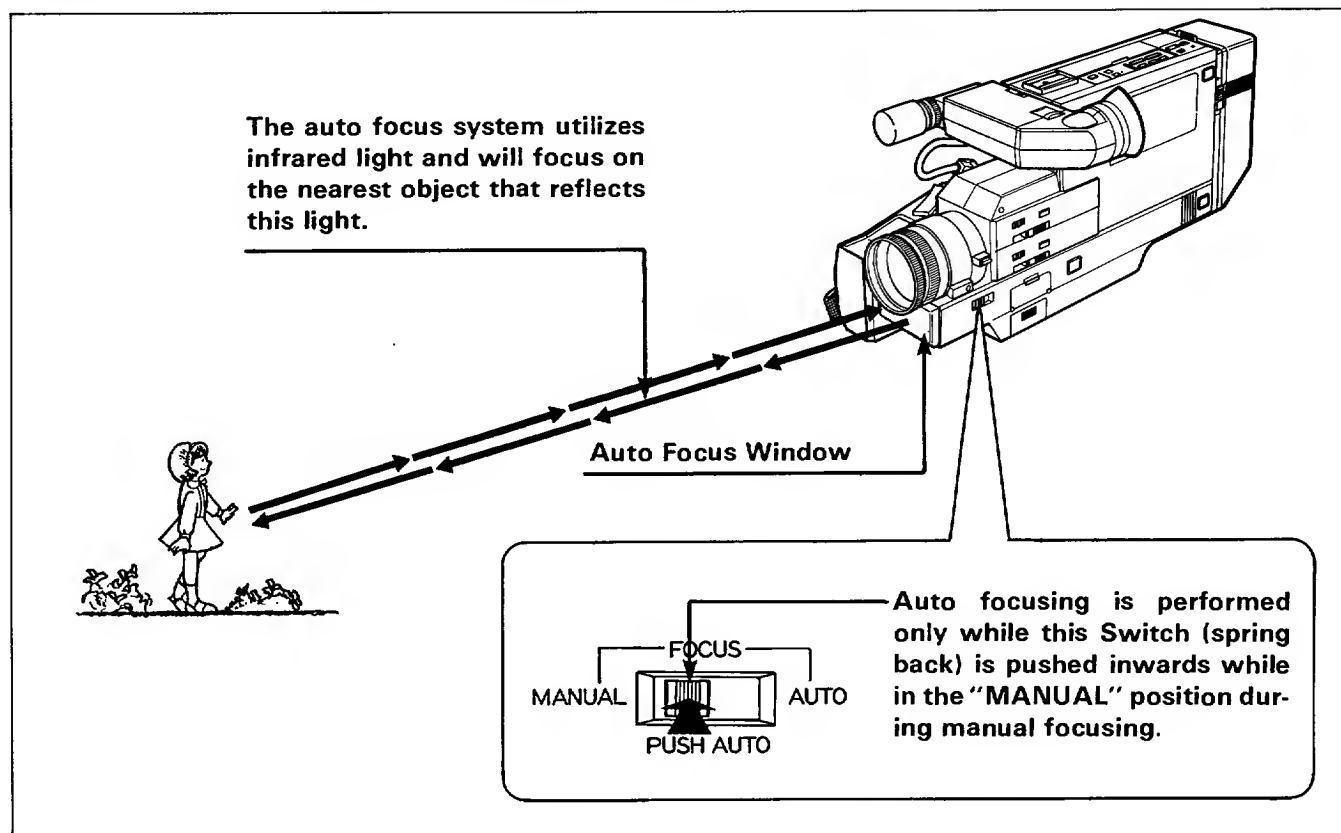
■ To manually adjust the iris

You can also adjust the iris manually.

- When the object is bright and the background is dark, set "IRIS AUTO/MANUAL" Switch to "MANUAL" and then move Manual Iris Control to the "CLOSE" position to reduce the iris opening.
- When the background is bright and the object appears to be too dark, set "IRIS AUTO/MANUAL" Switch to "MANUAL" and then move Manual Iris Control to the "OPEN" position to increase the iris opening.



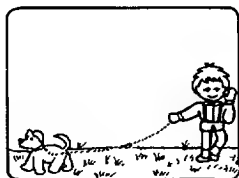
USING THE AUTO FOCUS FEATURE



With the "FOCUS AUTO/MANUAL" Switch set to "AUTO" position, the ordinary objects are automatically in optimum focus.

■ OBJECTS HARD TO AUTO FOCUS

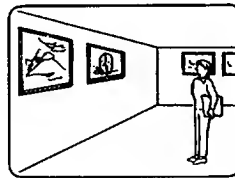
The distance between the Auto Focus Window and the object is measured, and the Focus Ring is automatically turned for focusing. However, with the scenes such as shown below, the auto focusing may not operate properly. Then, perform the manual focus. See next page.



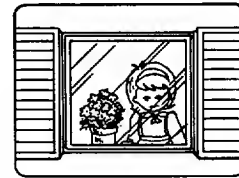
1. Object is not in the center.



2. Object in far and near positions at the same time.



3. Object with continuous variation from far to near positions.



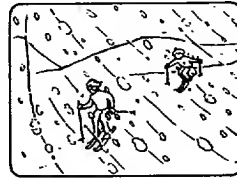
4. Object behind glass.



5. Black object or water which are hard to reflect infrared light.



6. Object always moving such as a crowd.

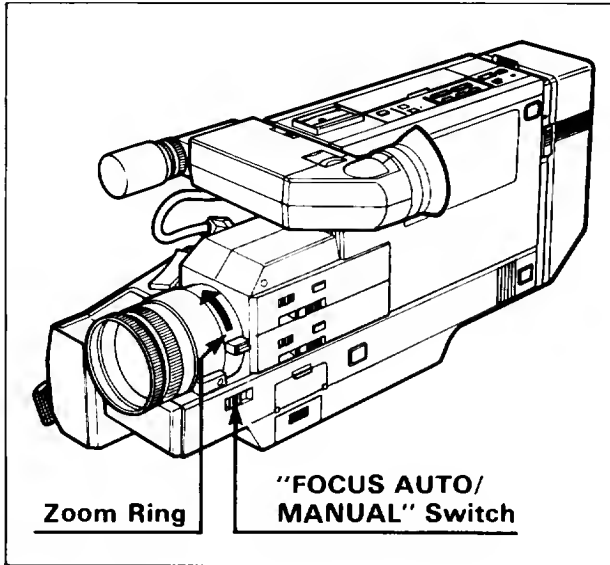


7. Object in the snow or fog.

■ MANUAL FOCUSING

1. Set "FOCUS AUTO/MANUAL" Switch to "MANUAL" position.
2. Zoom up the object by turning the Zoom Ring.

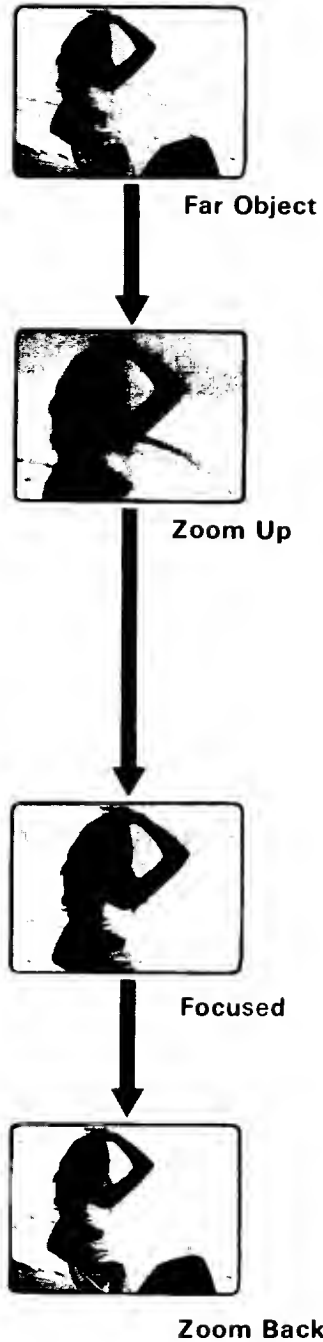
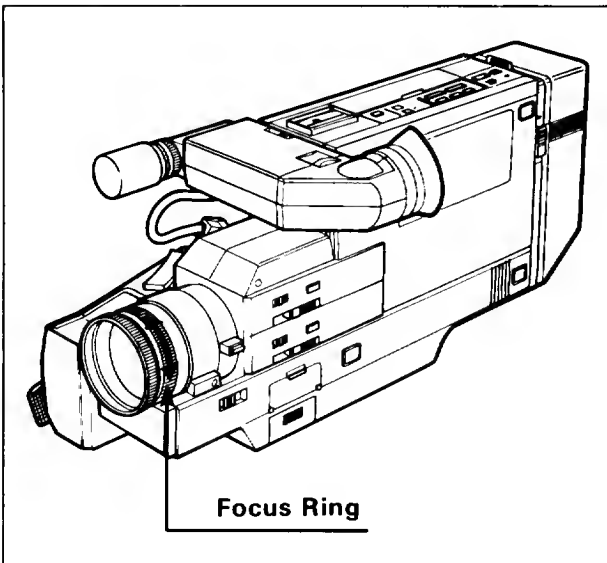
NOTE: See page 18 for "USING THE POWER ZOOM FEATURE".



3. Focus on the object by turning the Focus Ring.

NOTE: If focusing is performed without zooming up first, the picture may become out of focus when the zoom-up is done during actual picture taking.

4. Then, zoom back the object as desired.

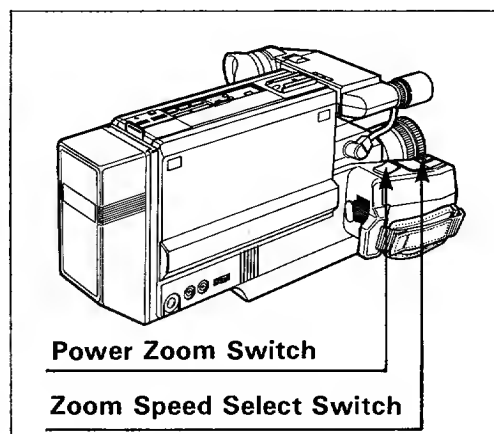


USING THE POWER ZOOM FEATURE

- Press Power Zoom Switch on the "W" side, and the picture gradually widens.



- Press Power Zoom Switch on the "T" side, and the picture gradually becomes telescopic.



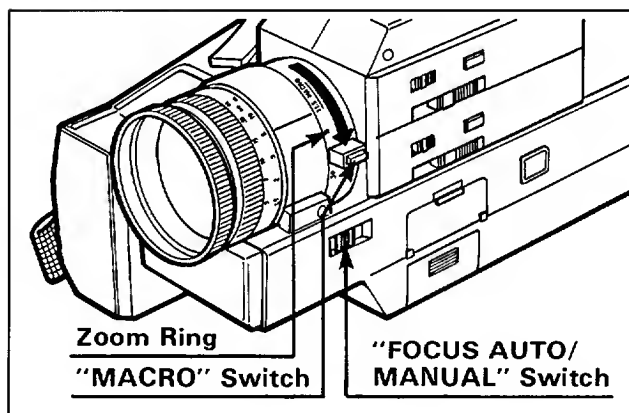
NOTES:

- Do not touch the Zoom Lever or Zoom Ring during power zooming.
- The zoom speed can be selected in 2 steps by changing over the zoom speed select switch.

USING THE MACRO FEATURE

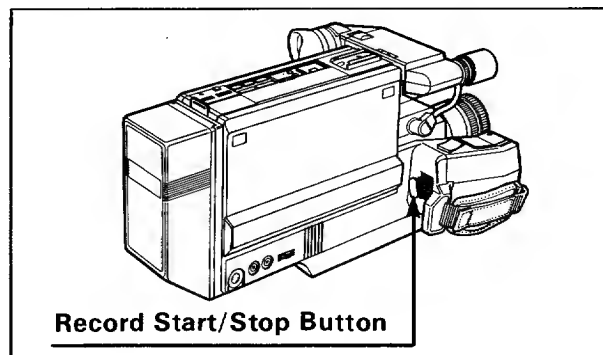
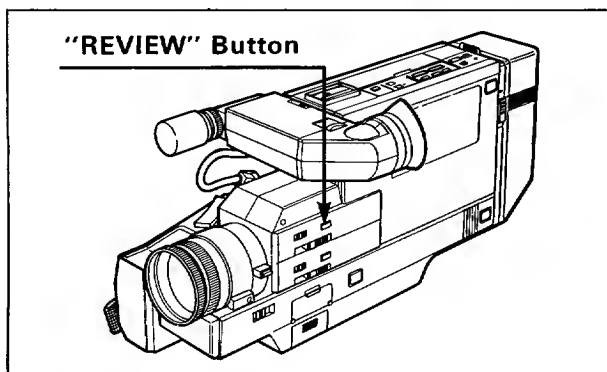
It permits you to shoot objects as close as 1 cm from the lens tip.

- Set "FOCUS AUTO/MANUAL" Switch to "MANUAL" position.
- Turn the Zoom Lever to "MACRO" while pressing "MACRO" Switch.
- Turn the Zoom Ring within the "MACRO" range (green line on the Zoom Ring) for focusing.



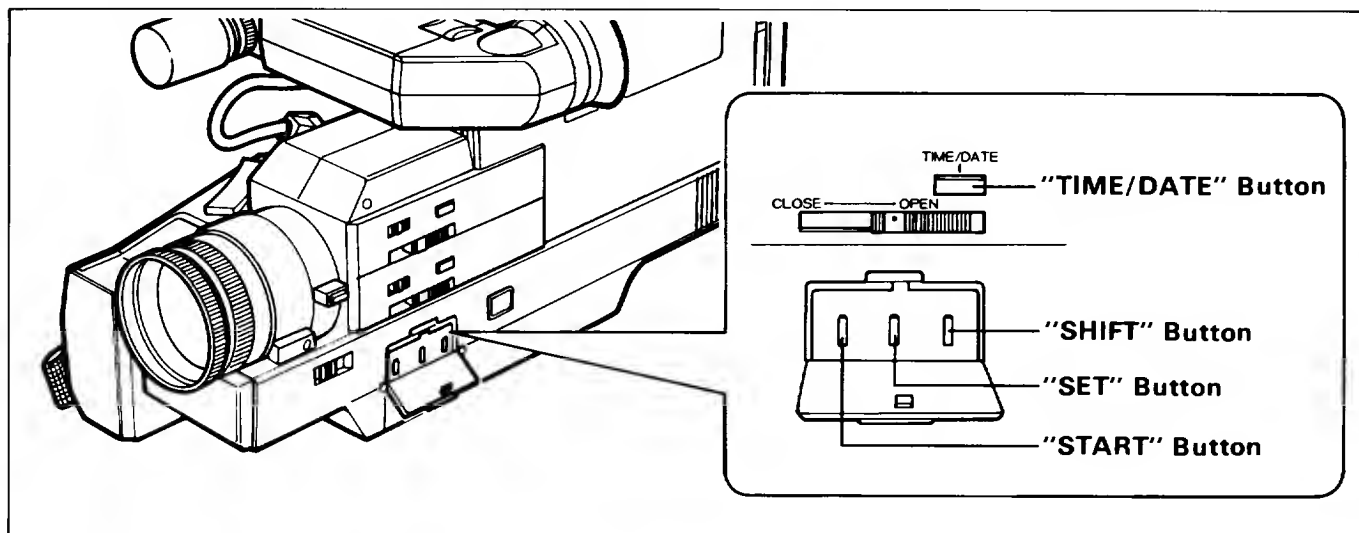
USING THE INSTANT REVIEW FEATURE

- In record/pause (stand-by) mode, press "REVIEW" Button, and the recorded scene of the last few seconds is played back in the reverse direction and then played back in the forward direction.
- When the tape reaches the end of the scene you have just recorded, the Video Camera/Recorder returns to the record/pause (stand-by) mode. Recording starts again when the Record Start/Stop Button is pressed again.

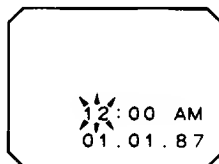


USING THE DATE/CLOCK DISPLAY FEATURE

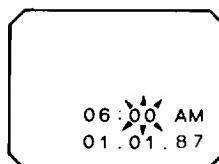
The day and/or time can be recorded on your tapes to act as a handy reference when viewing them at a later time. Use the following procedure to set up this display for the current date and time.



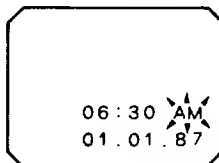
1. Load the Camera/Recorder's date/clock batteries (Accessory No. 14) as described on page 4.
2. Turn on Power of Camera/Recorder.
3. Press **"TIME/DATE"** Button.
"12:00 AM" and **"01.01.87"** appears in the Viewfinder and **"12"** flashes.



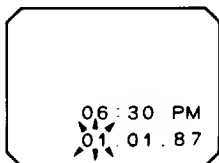
4. Press **"SET"** Button to select correct hour. Hold Button down to advance rapidly. When the correct hour appears, press **"SHIFT"** Button.



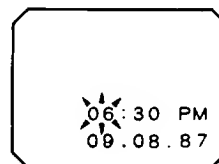
5. Press **"SET"** Button to select correct minute. Hold Button down to advance rapidly. When the correct minute appears, press **"SHIFT"** Button.



6. Press **"SET"** Button to select AM or PM, and then press **"SHIFT"** Button.



7. Press **"SET"** Button as many times as may be required to select month, and then press **"SHIFT"** Button.
8. Repeat Steps 7 to select date and year.



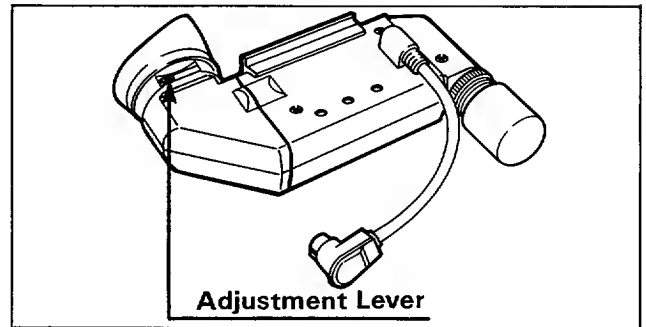
9. Press **"START"** Button to activate the date/clock.
10. Press **"TIME/DATE"** Button to remove the date/clock display from the viewfinder. The date/clock will continue to keep the correct time in memory.

NOTE: To correct date/clock information during programming, press **"SHIFT"** Button until the incorrect digit is flashing. Then use **"SET"** Button to enter the correct digit. If you wish to correct information after starting the date/clock, first press the side **"TIME/DATE"** Button, then press **"START"** and repeat Steps 4 through 10 at left.

The date/clock graphics will be recorded whenever they appear in the viewfinder. To display the clock, press **"TIME/DATE"** Button. To display date and clock together, press **"TIME/DATE"** again. To display date only, press **"TIME/DATE"** a third time. Pressing **"TIME/DATE"** a fourth time removes both graphics.

EYEPIECE ADJUSTMENT

To use the electronic viewfinder without eyeglasses on, move the Lever for your optimum focus adjustment.



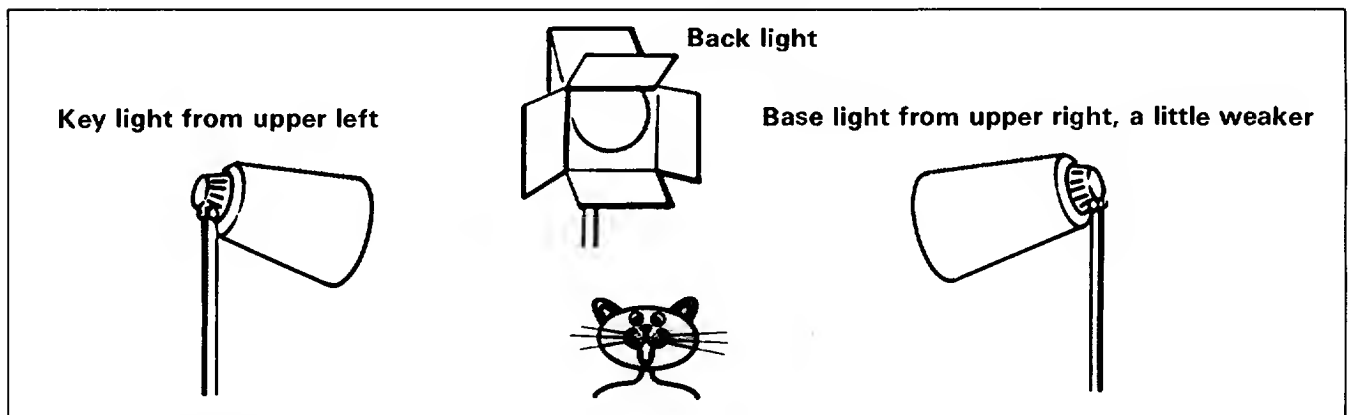
PRODUCING BEST COLOR PROGRAM

LIGHTING — Lighting should be uniform from the top —

Essential points on lighting people

1. A key light should be provided at the upper left in front of the person.
2. A weaker base light (spot) should be provided at the upper right and balanced with the key light.
(Adjusting so that the left:right ratio is 2 : 1.5 by moving the lights backwards and forwards.)
3. Use one more light behind the subject. This emphasizes the person's head and shoulders and prevents the subject from being lost in the background.

Caution: Do not place lighting equipment near the Video Camera/Recorder as heat from the lighting equipment can cause the Video Camera/Recorder to malfunction.



Approximate brightness value (for reference only)

Unit: lux

Illumination of 500 to 100,000 lux is required for clearest pictures, though the camera can shoot an object in illumination of 10 to 100,000 lux. Increase illumination when object illumination is less than 500 lux. Install an ND (Neutral Density) filter (52 mm dia. and 0.75 mm pitch) on the lens if an object's illumination exceeds 100,000 lux.

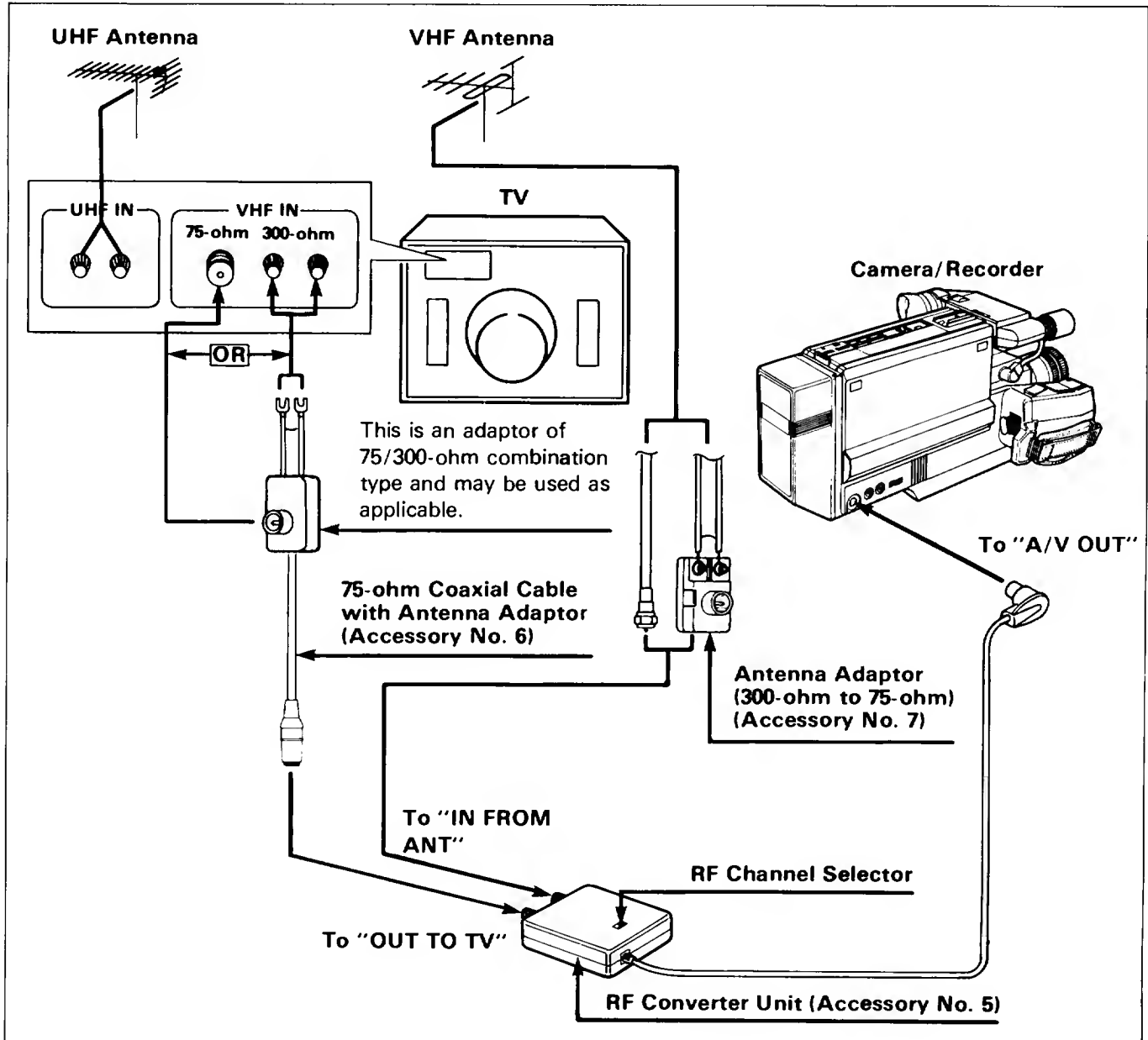
10	<ul style="list-style-type: none"> • Candle at 20 cm (10—15) • Cigarette lighter at 30 cm (15)
100	<ul style="list-style-type: none"> • During intermission at a movie theater (15—35) • Workshop in a machinery factory (150—200) • Arcade at night (150—200) • Flashlight at 1 meter (250) • Study desk with fluorescent lighting (400) • Office with fluorescent lighting (400—500) • Library reading room (400—500) • Bowling alley (500) • Sales floor of a department store (500—700)
1,000	<ul style="list-style-type: none"> • Clear day one hour before sunset (1,000) • Cloudy day one hour after sunrise (2,000)
10,000	<ul style="list-style-type: none"> • Cloudy day at 10 AM (25,000) • Cloudy day at noon (32,000) • Clear day at 3 PM (35,000) • Clear day at 10 AM (65,000)
100,000	<ul style="list-style-type: none"> • Clear day at noon (100,000)

CONNECTIONS AND OPERATIONS FOR VIEWING THE PICTURE PLAYED BACK ON YOUR TV

To play back a tape recorded on your Video Camera/Recorder and view it on your TV receiver, you must connect the Video Camera/Recorder to the TV receiver using either Audio/Video Output Adaptor (Accessory No. 9) or RF Converter Unit (Accessory No. 5).

You also may play back the tape recorded by your Video Camera/Recorder on any other VHS video tape recorder. The Video Camera/Recorder records and plays back in VHS standard speed (SP). The tape recorded in long play (LP) or extra long play (EP) will not be played back on this Video Camera/Recorder.

Example 1: If your TV is a regular TV,



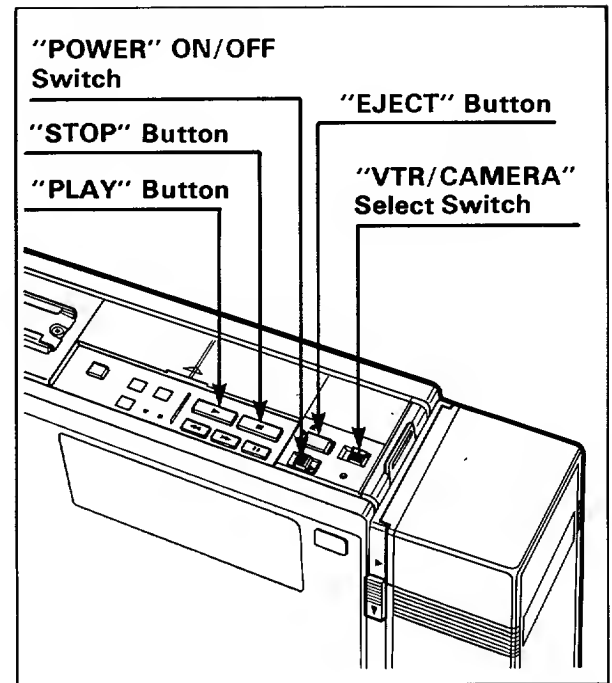
1. Disconnect the VHF antenna leads from the rear of the TV receiver.

NOTE: Leave the UHF antenna leads connected to the TV.

2. Connect the VHF antenna lead to "IN FROM ANT" on the RF Converter Unit (Accessory No. 5). If the cable is round (75-ohm), it will connect directly to the "IN FROM ANT". If it is the flat type (300-ohm), connect it to the Antenna Adaptor (300-ohm to 75-ohm) (Accessory No. 7) and slip the Adaptor on to the "VHF IN FROM ANT" terminal.

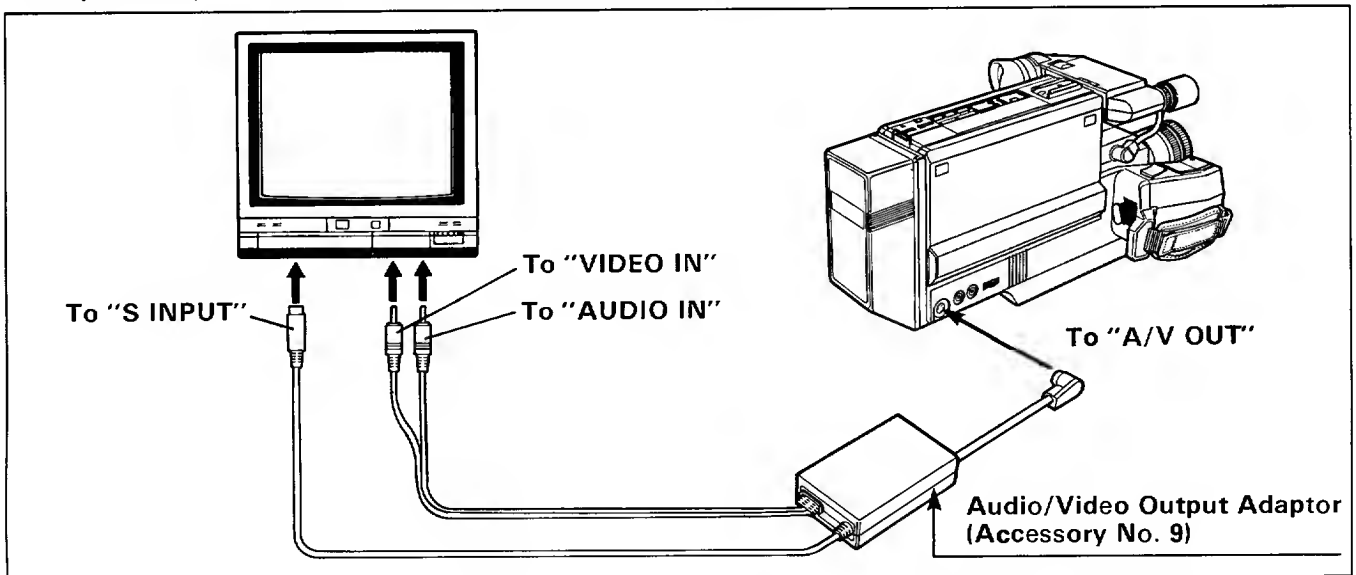
3. Connect the 75-ohm Coaxial Cable with Antenna Adaptor (Accessory No. 6) to "OUT TO TV" on the RF Converter Unit.
4. Connect the other end to the VHF antenna terminal on the TV, as illustrated on page 21.
5. Connect the Connector Cable from RF Converter Unit to "A/V OUT" jack on the Video Camera/Recorder.
6. Turn on the TV and set to Channel 3 unless Channel 3 is one of the TV stations in your area. If Channel 3 is used in your area, set your TV to Channel 4.
7. Set the RF Channel Select Switch on the RF Converter Unit to "CH3" or "CH4" to match the channel selector on your TV. This is the Video Camera/Recorder channel on your TV set. Your TV receiver must be turned to this channel any time a video cassette is played back on the Video Camera/Recorder.
8. Press "EJECT" Button on the Video Camera/Recorder and then insert the cassette.
9. Set "VTR/CAMERA" Select Switch to "VTR" position.
10. Set "POWER" ON/OFF Switch on.
11. Press "PLAY" Button.

12. After playing press "STOP" Button.



NOTE: If you want to watch a TV program with Video Camera/Recorder connected as illustrated, press "POWER" ON/OFF Button of the Video Camera/Recorder off, or disconnect the connector cable of RF Converter Unit from "A/V OUT" jack on the Video Camera/Recorder.

Example 2: If your TV has "VIDEO IN" and "AUDIO IN" jacks,



1. Connect the Audio/Video Output Adaptor (Accessory No. 9) to "AUDIO IN" and "VIDEO IN" of your TV.

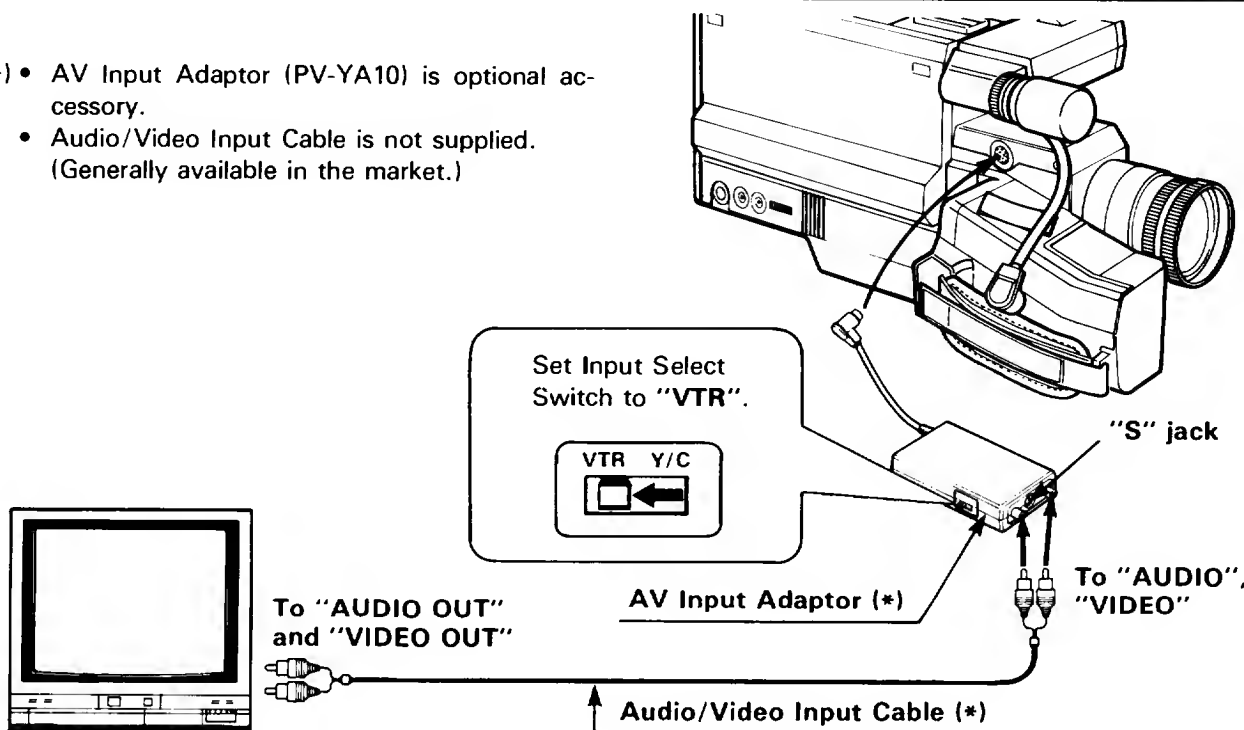
NOTE: If your TV has "S INPUT" jack, connect the Audio/Video Output Adaptor to "S INPUT" and "AUDIO IN" of your TV.

2. Connect the other end of the Audio/Video Output Adaptor to "A/V OUT" of your Video Camera/Recorder.
3. Turn on TV and select the Video Input.
4. Perform same procedures in Steps 8 through 12 of "Example 1" above.

CONNECTIONS AND OPERATIONS FOR RECORDING TV PROGRAM

If your TV has audio/video out jacks, you can record the TV program with Camera/Recorder.

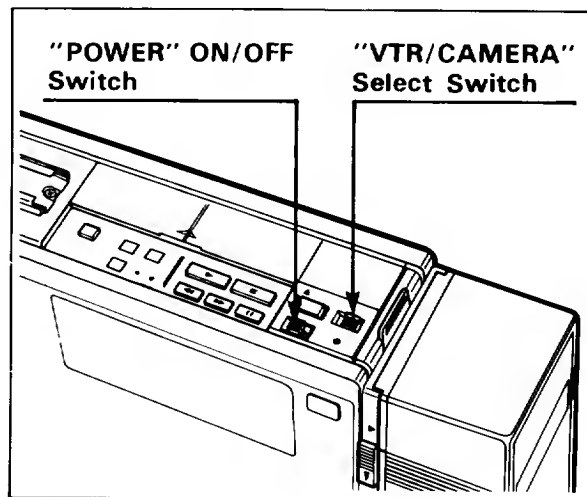
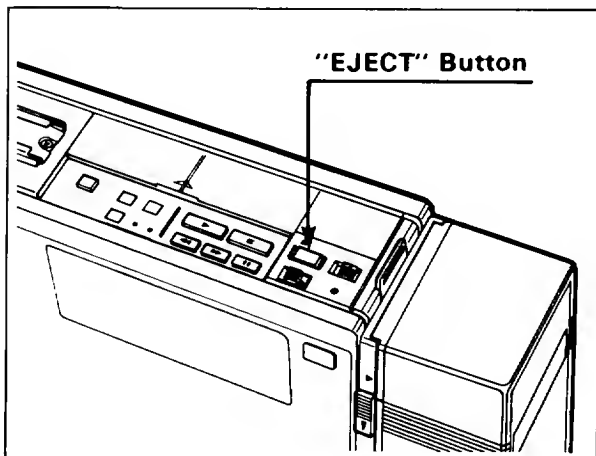
- (*) • AV Input Adaptor (PV-YA10) is optional accessory.
- Audio/Video Input Cable is not supplied. (Generally available in the market.)



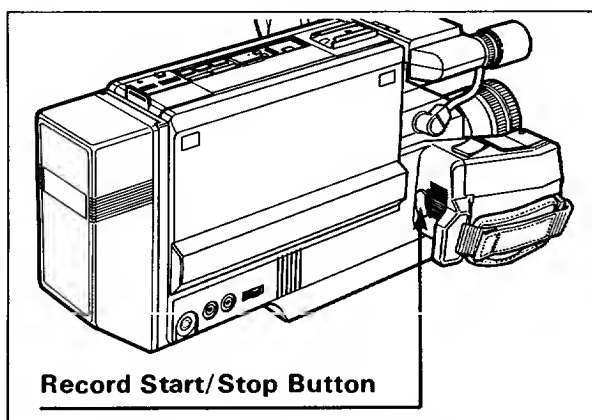
1. Remove the cable of the Electronic Viewfinder from the Video Camera/Recorder.
2. Plug the Audio/Video Input Adaptor to Video Camera/Recorder.
3. Connect the Audio/Video Input Cable to "AUDIO" and "VIDEO" of the Audio/Video Input Adaptor. Connect the other ends to "AUDIO OUT" and "VIDEO OUT" of your TV respectively.
4. Press "EJECT" Button and insert the cassette.

NOTE: Power source must be connected to the Video Camera/Recorder.

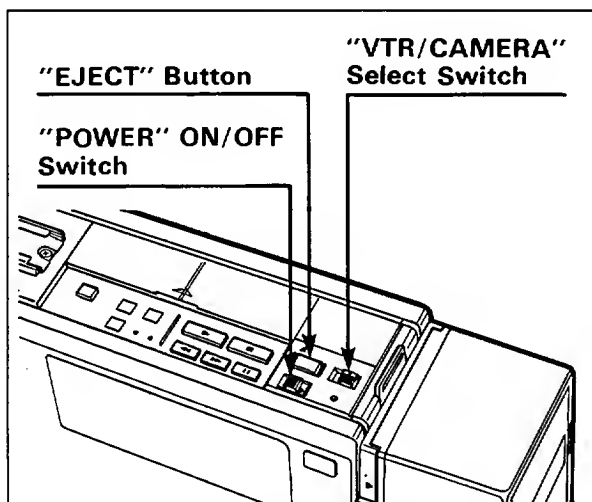
5. Set "VTR/CAMERA" Select Switch to "CAMERA".
6. Set "POWER" ON/OFF Switch on.
7. Press Record Start/Stop Button to start recording. You are now recording the program you see on your TV screen.



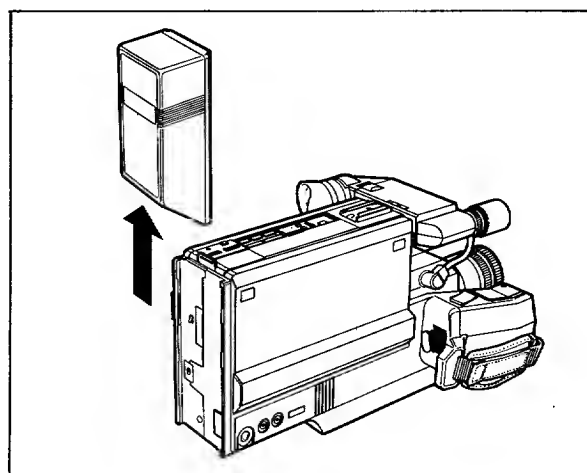
8. Press Record Start/Stop Button once again to stop recording.



9. After recording, set "VTR/CAMERA" Select Switch to "VTR", and the Video Camera/Recorder will be now in the stop mode.
10. Set "POWER" ON/OFF Switch off and then "EJECT" Button to remove the cassette.



11. Remove the Power Source from the Video Camera/Recorder.



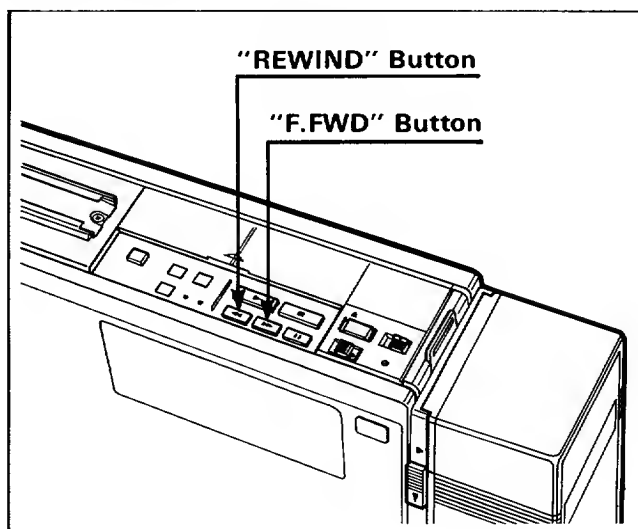
NOTE: Connect the S-input jack* of the PV-YA10 to the S-output jack* of an **SVHS** VTR to record the video signal from the VTR on this camera/recorder. With this connection, set the input select switch of the PV-YA10 to "YC". Connect the audio input jack of the PV-YA10 and the audio output jack of the VTR to record the audio signal.

*S input or output jack inputs (outputs) the video signal after separation into luminance (Y) and chrominance (C) signals. Connecting jack to a TV set gives a picture that is much clearer than can be obtained from the signal supplied through the conventional video jack. The "S" in the S input/output jack stands for a "S"eparate Y/C.

USING THE F-SEARCH AND R-SEARCH FEATURES

When you press "F.FWD" or "REWIND" Button during playback, the tape will be played back at a speed about 3 times faster than the normal playback speed, and you can easily locate a certain spot on the tape.

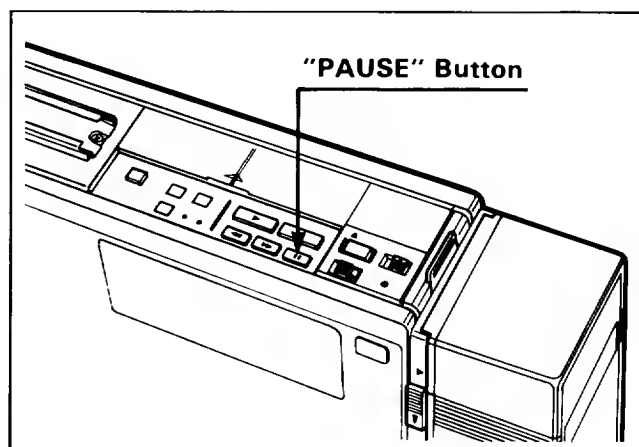
NOTE: There will be some noise (interference) in the F-search or R-search pictures.



USING THE PAUSE FEATURE

When **"PAUSE"** Button is pressed during playback, **"PAUSE"** Light will come on and a still picture can be seen. To start again press **"PAUSE"** Button and **"PAUSE"** Light will go off and playback will be resumed.

NOTE: There will be some noise (interference) in the still picture.

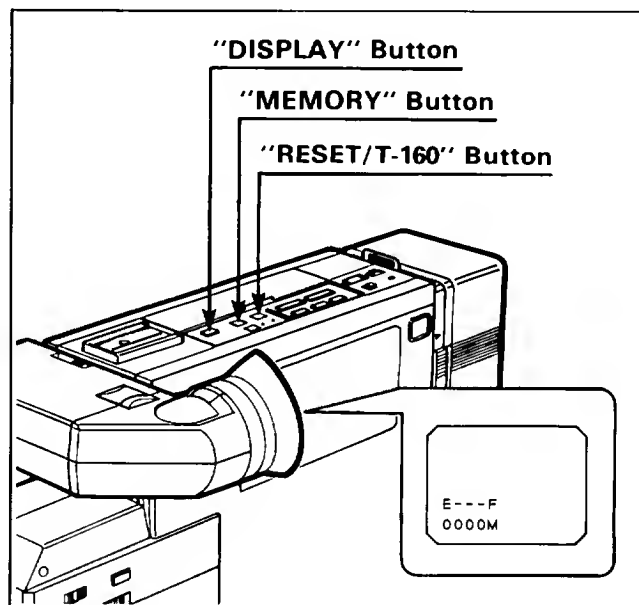


USING THE MEMORY FEATURE

Pressing **"DISPLAY"** Button causes a 4-digit counter display to appear in the viewfinder (along with the battery level graphic). The tape counter acts as a handy reference to help you locate taped segments. Press **"RESET/T-160"** Button to set the counter to **"0000"** before starting to record or play. Note the number on the tape counter at the beginning and end of each program you want to record. This will allow you to use the counter to locate desired programs.

The tape counter also includes a switchable **"memory"** feature. When the memory is on, the tape automatically stops when the counter reads **"0000"** during Fast Forward and Rewind. This is useful if there is a section of tape you want to review immediately after recording, or if you want to return to the same point several times in a row.

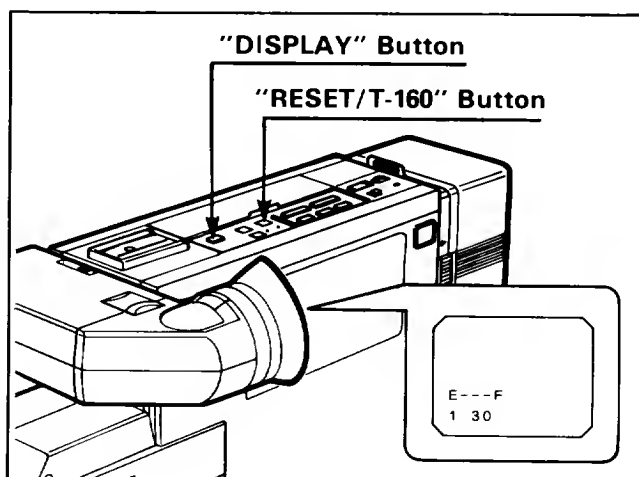
To use the counter memory, reset the counter to **"0000"** when you reach the point on a tape you wish to index. Then press the **"MEMORY"** Button. The letter **"M"** will appear with the counter or time remaining display. Continue to play or record the tape, and when you wish to return to the index point, simply press **"REWIND"**.



USING THE TIME REMAINING FEATURE

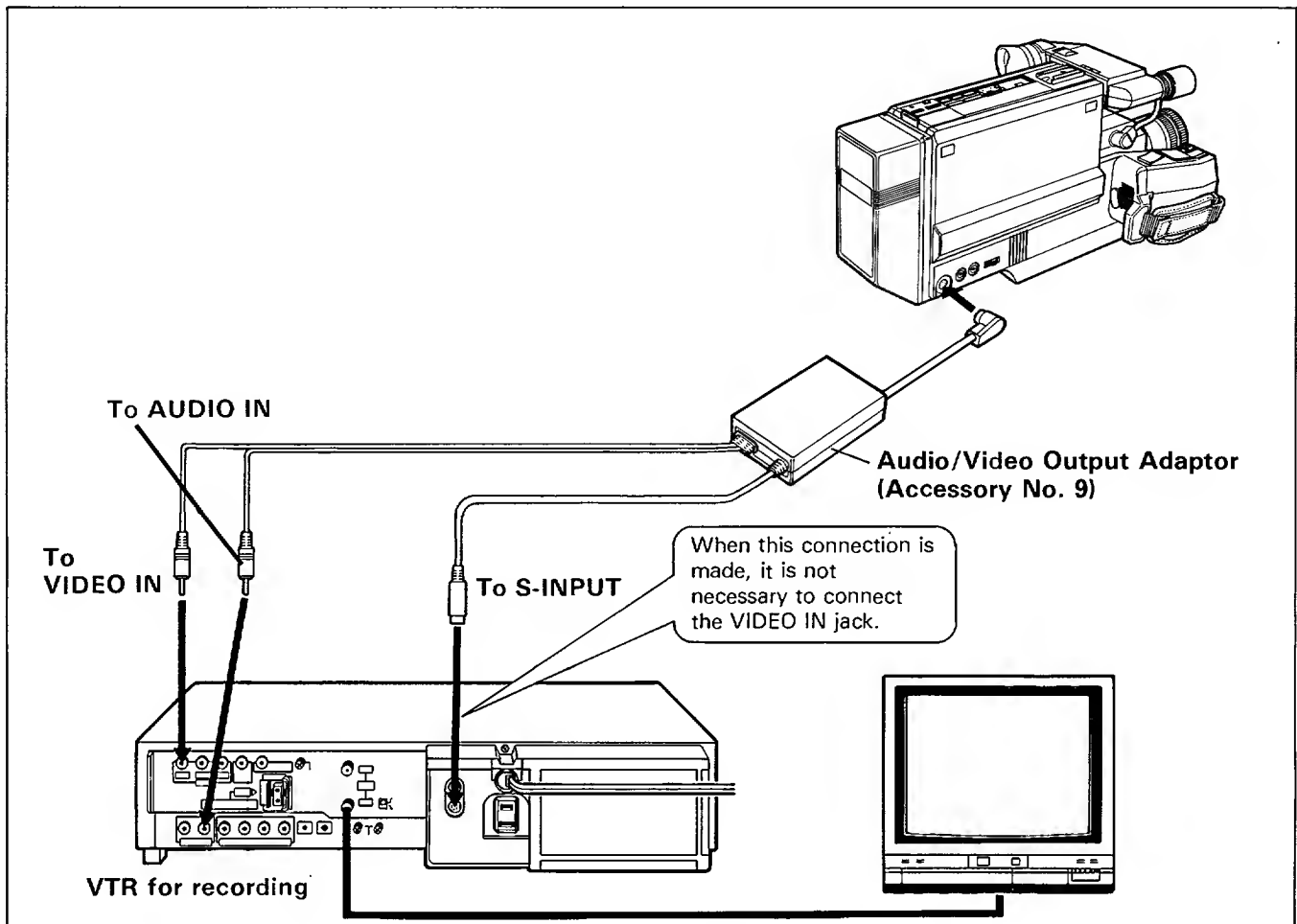
When the tape counter is present in the viewfinder, pressing **"DISPLAY"** Button again will change the display to a read-out showing the amount of recording or playback time left on the tape. Pressing **"DISPLAY"** Button once more clears all graphics from the viewfinder.

NOTE: When using an extended length T-160 cassette, you must press **"RESET/T-160"** Button to adapt the Camera/Recorder's time remaining system for an accurate read-out. (If the counter is being displayed, **"RESET/T-160"** Button resets the counter to **"0000"**.)



CAMERA/RECORDER TO VTR DUBBING

If you wish to exchange or copy some of your friend's favorite home recordings, the following instructions can be used to connect one VTR to another for this purpose.



1. Connect the Camera/Recorder, VTR and TV as shown in the figure, and then turn on their power switches.
2. Play the tape on Camera/Recorder and record it on VTR.

NOTE: If you connect the "VHF OUT OF TV" connector of VTR to the "TV ANT" connector, as illustrated and press "VTR/TV" Selector to turn the SELECTOR's Light on, the picture being dubbed by VTR can be monitored.

TROUBLESHOOTING

Your Video Camera/Recorder is a highly sophisticated instrument. It has been carefully checked and adjusted at the factory under the most rigid quality control and inspection systems. However, should problems develop, check the following points and take necessary corrective measures.

INSERTING OR REMOVING THE CASSETTE

Symptom	Check Point & Correction
Cassette Holder cannot be opened when you press "EJECT" Button.	* Connect the Power Source.
Cassette cannot be inserted into Cassette Compartment.	* Load cassette in direction indicated by arrow on cassette.

CAMERA RECORDING

Symptom	Check Point & Correction
Picture does not appear in the Viewfinder.	* Remove the Lens Cap.
	* Set "POWER" ON/OFF Switch on.
	* Plug the connector cable from Electronic Viewfinder to the Jack of Camera/Recorder.
	* Set "VTR/CAMERA" Switch to "CAMERA" position.
The Camera/Recorder will not go into the recording mode, even when Record Start/Stop Button is pressed.	* The cassette has had the erase prevention tab removed. Stick a piece of cellophane tape over the erase prevention hole or select a different cassette.
	* Set "VTR/CAMERA" Switch to "CAMERA" position.
	* The Indicator Lamp in the Electronic Viewfinder flashes to indicate Battery is discharged. Try another Battery or charge the Battery.

RECORDING TV PROGRAMS OFF THE AIR

Symptom	Check Point & Correction
The Camera/Recorder will not go into the recording mode, even when Record Start/Stop Button is pressed.	* The cassette has had the erase prevention tab removed. Stick a piece of cellophane tape over erase prevention tab hole or select a different cassette.
	* Set "VTR/CAMERA" Switch to "CAMERA" position.
	* The Indicator Lamp in the Electronic Viewfinder flashes to indicate Battery is discharged. Try another Battery or charge the Battery.

PLAYBACK OF PRE-RECORDED CASSETTE

Symptom	Check Point & Correction
"PLAY" Button cannot be engaged.	* Set "VTR/CAMERA" Switch to "VTR" position.
No picture appears on television screen when "PLAY" Button is pressed. (TV is connected to the Camera/Recorder by using RF Converter Unit.)	* Set the television to the Camera/Recorder channel (3 or 4) depending upon the selected channel on the RF Channel Select Switch of RF Converter Unit.
Interference on playback picture.	* Adjust "TRACKING" Control.
	* When you see the playback picture on your TV, adjust fine tuning knob on television set to obtain best picture.
	* The pre-recorded tape is EP or LP recording. This Camera/Recorder is for use in SP recording only.
Picture bends at the top of TV screen.	* Tape is damaged. Try another cassette.
Color of your TV screen is too bright, too faint or change.	* TV set has VIR circuit. Turn it off during playback.

DEW LIGHT

Symptom	Check Point & Correction
"DEW (POWER)" Light flashes.	* Condensation on the Camera/Recorder mechanism — wait until the Unit has reached normal room temperature, and condensation has dried. "DEW (POWER)" Light will then stop flashing.

HEAD CLEANING

- Picture playback may become blurred or be interrupted. This does not mean that the recorded program has been erased.
- Dirt accumulated on the head after long periods of use causes this problem. In this case, head cleaning requiring highly technical care is necessary.
- For head cleaning consult the nearest dealer or VTR Service Center for recommendations.



PERIODIC MAINTENANCE

The Video Camera/Recorder is a precision electromechanical device which will require periodic maintenance after a period of normal use. We expect that no maintenance other than head cleaning will be required during the warranty period by most users, unless the Video Camera/Recorder is heavily used or seldom used. Normal maintenance is the responsibility of the user, although defective parts are covered during the warranty period. Consult your VTR Service Center to determine recommendations for normal maintenance based on your location, use patterns and machine age.

SPECIFICATIONS

■ General

Power requirements	12V DC
Power consumption	10 watts (nominal)
Dimensions	6-7/16"(W) x 7-9/16"(H) x 14-5/16"(D) 164(W) x 192(H) x 364(D) mm
Weight	5.5 lbs (2.5 kg)

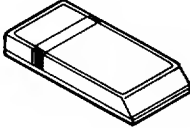
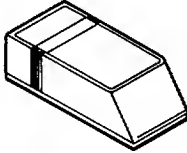
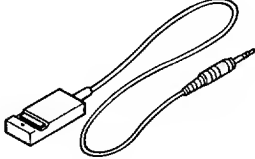
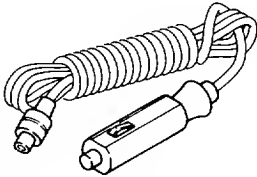
■ Video Recorder Section

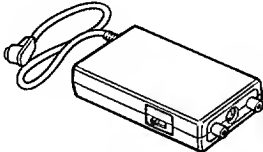
Format	S-VHS
Record/playback system	Four video record/playback heads
Video signal	EIA standard NTSC color
Tape speed	33.35 mm/sec.
Video input	1.0 Vp-p, 75 ohm
Video output	1.0 Vp-p, 75 ohm
Audio input	-7.8 dBs (316 m Vrms), more than 47K ohms
Audio output:	-7.8 dBs (316 m Vrms), less than 1K ohm
Fast forward/rewind time	Less than 10 minutes with T-160 cassette

■ Camera Section

Scanning	525 lines/60 fields/30 frames
Required minimum illumination	10 lux
Image Sensor	2/3" solid state MOS Imager
Lens diameter	52 mm

OPTIONAL ACCESSORIES

Battery Pack (1 hour type) PV-BT11	Battery Pack (2 hour type) PV-BT12	Remote Pause Switch VM-RM20	Car battery Cord PC-YC12
			

AV Input Adaptor PV-YA10


PENTAX

PENTAX CORPORATION. 35 Inverness Drive East Englewood, CO 80112
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PENTAX CORPORATION. 1101 Stewart Ave. Garden City, NY 11530
Service information : (516) 222-0830

PENTAX CORPORATION. 350 East Devon Ave. Itasca, IL 60143
Service information : (312) 250-9000

PENTAX CORPORATION. 8363 Reseda Blvd. Northridge, CA 91324
Service information : (818) 701-5080